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A. NEELY HALL

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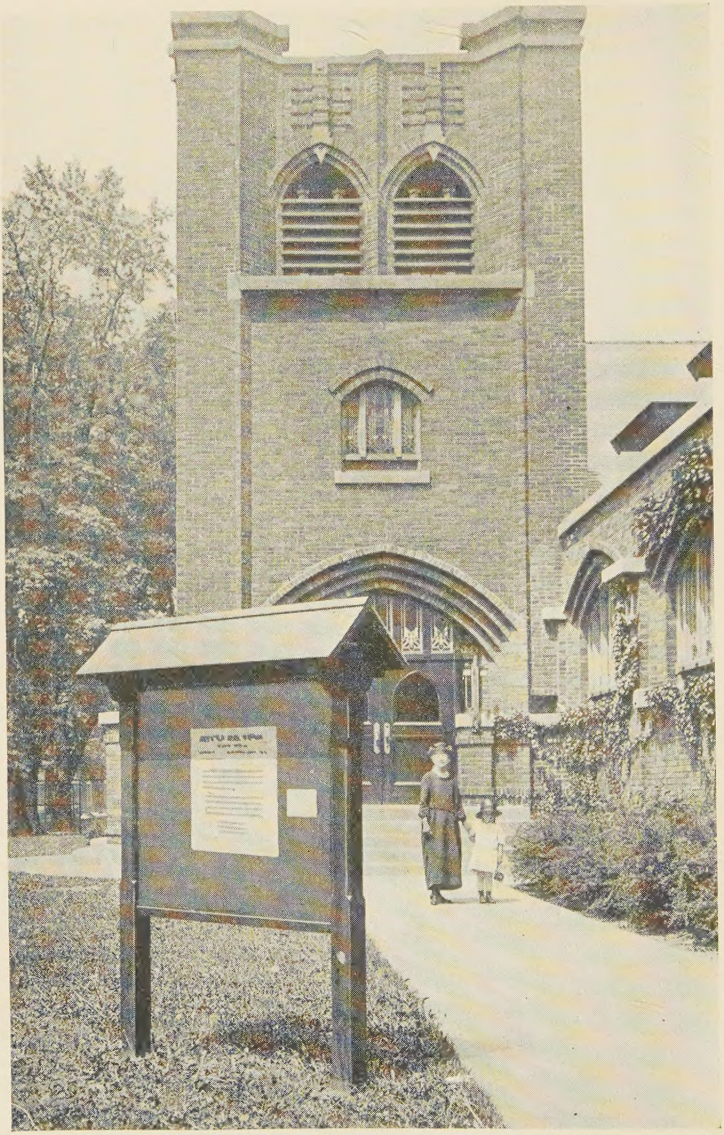

FIG. 301. A BULLETIN BOARD OF DIGNIFIED DESIGN FOR THE CHURCH LAWN. (See Chapter XVII.)

[*Frontispiece*

CHURCH AND SUNDAY SCHOOL HANDICRAFT FOR BOYS

Skill through Service

BY

A. NEELY HALL

Author of "Home Handicraft for Boys," "The Boy Craftsman," "Home-made Toys for Girls and Boys," "Home-made Games and Game Equipment," "Handicraft for Handy Boys," "Handicraft for Handy Girls," "The Handy Boy," "Carpentry and Mechanics for Boys," etc.

WITH NEARLY FOUR HUNDRED
PHOTOGRAPHS AND WORKING DRAWINGS
BY THE AUTHOR

NEW YORK
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1923

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Church and Sunday School Handicraft for Boys. II

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To

MOTHER

WHO GAVE ME MY FIRST LESSON
IN HANDICRAFT AND ASSISTED
IN MANY BOYHOOD ACTIVITIES

TO PARENTS AND CHURCH LEADERS

There is not a thing in this book which your boys cannot make and not a piece of equipment which your church or Sunday school cannot use. The content, therefore, will serve two purposes—teaching the boys skill and training them in practical ways of serving the church.

No better place than the home can be found to make things, and the lad is fortunate who has the happy combination of a home work-shop and a father willing to work alongside him. The average boy who has had instruction in the handling of tools at school, or has become skillful through instruction in handicraft books, can generally be relied upon to turn out creditable work. Adult supervision is advised for untrained boys. A woodworker may be found willing to organize a boys' class in craftsmanship to meet in a work-shop in the church basement or in a home.

Another plan is to take up this matter of making equipment with the boys' manual-training teacher. An instructor is always on the lookout for new class problems, and under his guidance groups of boys can build the larger pieces of equipment. It may be necessary to assume the costs of material, but that can be arranged easily.

It is never a problem to obtain volunteer workers among boys. In fact, boys' services are not used

in the community as much as they might be. Leaders too often underestimate the ability of boys. Give them a trial. Let them not only make equipment, but do odd jobs about the church building. You will find them your most reliable workers.

A Boy Scout's motto is "Do a Good Turn Daily." He accepts no payment for good turns, which, of course, is the proper spirit. But this matter of building church and Sunday school equipment should be looked upon as something more than a good turn. Let there be a special evening's program to include the presentation of work, and let there be a metal plate with the boy craftman's name thereon to tack to each article. A Boy Scout's year is incomplete without two weeks in camp, and I assume that most of the boys who volunteer to make church and Sunday school equipment will be Boy Scouts because they are of the type of boys eager to serve. The church budget permitting, no better expression of appreciation of the boys' services could be found than an appropriation for the summer camp.

TO BOYS

The next time there are to be doings at the church, and you hear that father and other men are to meet to do carpentry, suppose that you drop in on them, watch the proceedings and figure out if there is any part of the work which you and other members of your class could not do as well. Possibly there is no better workman in the community than your father; but you will discover men who cannot drive home a nail, much less saw a board straight, men who didn't learn to work with tools as you have learned. Having made observations you will go home with greater confidence in your ability to do things.

Church and Sunday school carpentry has consisted for the most part of building bazaar booths, scenery and properties for plays, a Santa Claus fireplace for the Christmas entertainment, and other temporary construction work, and repairs. But there is much working equipment that can also be homemade. This volume is full of suggestions, all tried and found good. At a glance you will see many things which you know would be helpful in your Sunday school. You and the boys of your class and other classes can easily build anything shown in the book. Be advised as to the particular needs of your church and Sunday school as to dimensions, kind of wood, and finish desired.

Materials, especially for the larger pieces of equipment, will probably be provided for you.

This work will necessitate missing a ball game now and then, passing up a good moving-picture show, or radio program, and it will delay the making of something that you want for yourself, but such sacrifice results in character building, and now is the time to build. You will feel rewarded in the thought that you are doing something of real worth for your church and establishing yourself as one of its essential members. Bear in mind, also, that whenever you make something well, you become more skillful, and you will get the significance of the subtitle of this volume—skill through service.

A. N. H.

Elmhurst, Illinois.

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CHURCH AND SUNDAY SCHOOL
HANDICRAFT FOR BOYS

CHURCH AND SUNDAY SCHOOL HANDICRAFT FOR BOYS

Chapter I

THE CHURCH WORKSHOP

A Solid Workbench—A Vise—A Bench-Stop—A Box Bench—A Tool Board—An Odd-Job Nail-Box.

The maintenance of building equipment, the construction of bazaar booths, scenery and properties for plays and other entertainments require the use of tools, and are reason enough for a basement workshop if the shop is nothing more than a corner large enough to accommodate a bench and afford working space. Few church basements are so equipped, because the busiest men of the community are usually the hardest workers in the church, and have enough demands on their time without casting about for something to do.

You can appreciate the need of a bench in the church building if you have a home workbench. You know how much better you can plane a board held in a bench vise than one held by hand, and how much better you can perform all tool operations on a solid bench than on a rickety table, box or chair. If you

haven't a home bench, you had better make one like that shown in this chapter, or like one of the benches described in "Home Handicraft for Boys" or my other handicraft books. Then, suppose you build a second bench for your first handicraft contribution to the church. Possibly the janitor is ruler of the basement domain, in which case it would be well to consult him before installing the bench.

A SOLID WORKBENCH

There isn't much work to the construction of a bench like that shown in Figure 1, and it can be built quickly. Figure 2 shows the completed framework.

The Legs A are 2-by-4s 28 inches long. Top plates B are 2-by-4s, and end cross-rails C are 1-by-4s, each 29 inches long. Side cross-rails E are 1-by-4s 5 feet long, and diagonal braces D and F are 1-by-4s. After cutting the pieces, build the pair of end frames, spiking plates B to the ends of legs A, and nailing rail C and braces D to the legs as shown in Figure 2. When these frames have been assembled, connect them with rails E and diagonal braces F. Test the corners of the frames with a square, before nailing the diagonals in place, to make sure that they are right angles.

The Bench Top requires three pieces of 2-by-10-inch stuff 6 feet long. Set the first and third planks even with the ends of plates B, and project all of the ends 6 inches over the end frames. Spike the planks to the framework, and drive the heads well below the surface. Next, nail the apron G (Fig. 3) to the

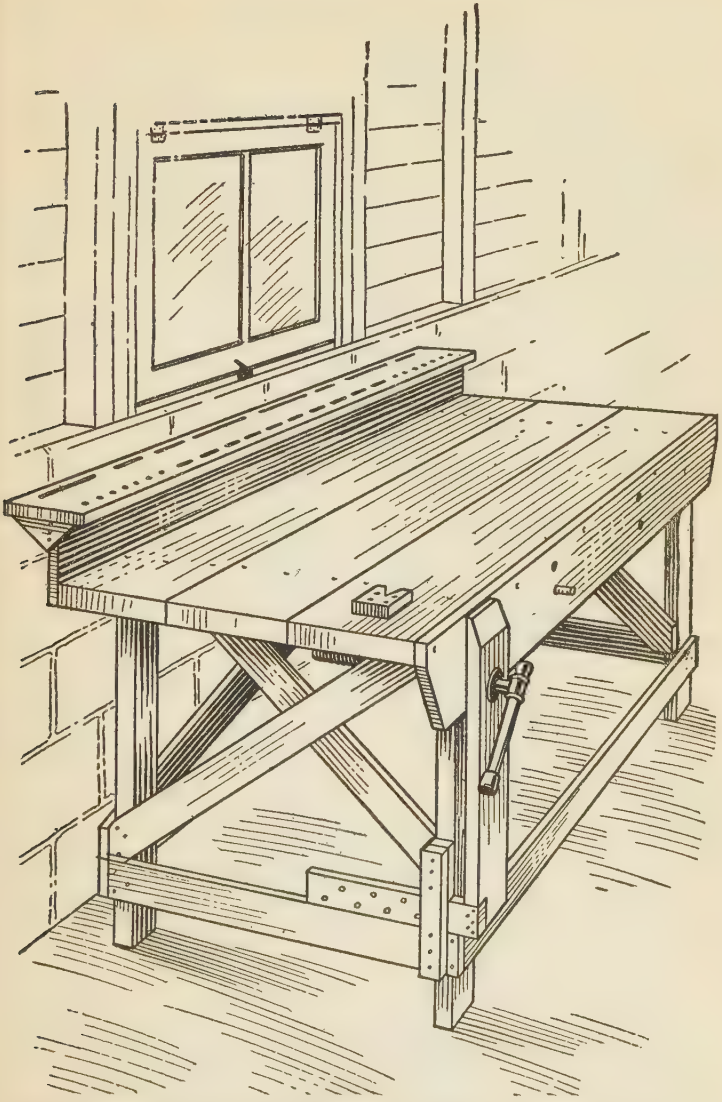
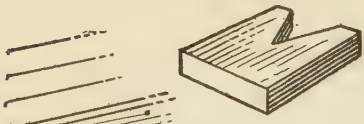


FIG. 1. THERE ISN'T MUCH WORK TO MAKING A BENCH LIKE THIS

Fig. 6



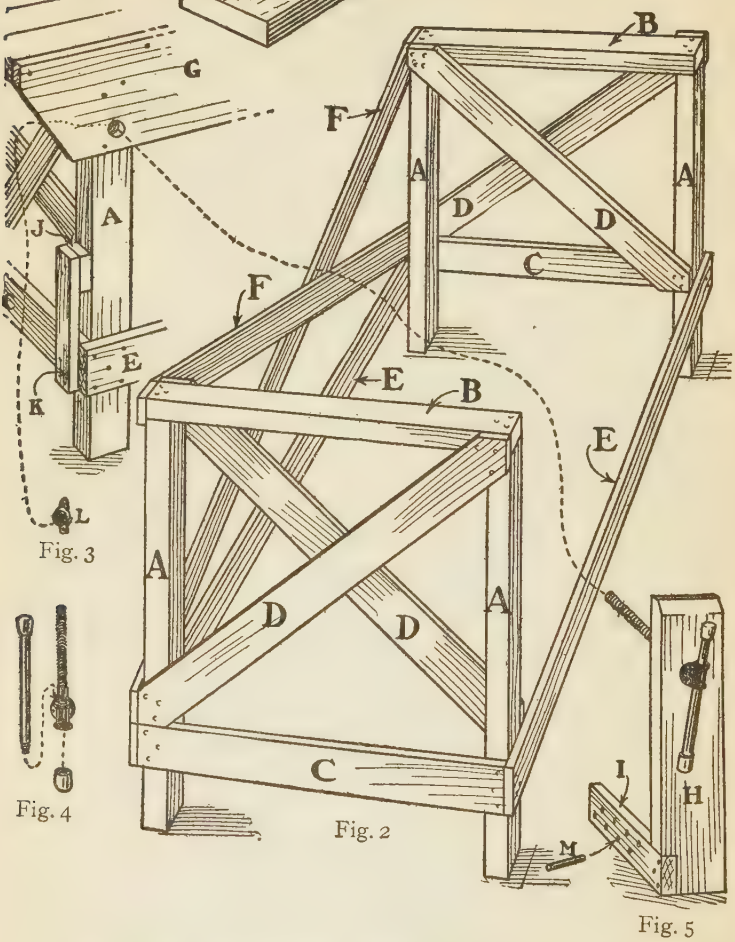


Fig. 3

Fig. 4

Fig. 2

Fig. 5

FIG. 2. THE COMPLETED FRAMEWORK OF THE WORK-BENCH
FIGS. 3-5. DETAILS OF THE BENCH-VISE
FIG. 6. A BENCH-STOP

front of the bench. Cut this out of a 1-by-10-inch board. Trim off the ends as indicated.

The Bench-vise requires an iron bench-screw (Fig. 4). This will cost about 75 cents at a hardware store. Cut the vise jaw H (Fig. 5) out of a piece of 2-by-6 20 inches long, bore a hole through the center of one face 6 inches below the top to receive the bench-screw, bevel off the top as shown, and notch the lower end for sliding-strip I, which is 1 by 3 by 14 inches in size.

The bench screw runs through a hole in the bench-apron and leg, and screws into the threaded socket (L, Fig. 3) provided with it. The socket must be set into the inner face of the bench leg and be fastened with screws.

Sliding-strip I (Fig. 5) is a guide for the vise-jaw. When you place work in the vise, and adjust the peg in the right hole, the strip keeps the lower end of the jaw from pushing in too far. Make a pocket with blocks J and strip K, as shown in Figure 3, for the sliding-strip to slide in, and use a wooden peg or iron bolt for the peg M (Fig. 5).

A Bench-stop. Cut a block of wood 4 by 6 inches in size, make a V-shaped cut in one end (Fig. 6), and screw it to the left end of the bench top to shove work against.

A BOX BENCH

For odd jobs in the church building, a small bench like that shown in Figure 7 will save the wear and tear on chairs and tables which generally result from

their use as saw-horses and benches. Being light in weight, it can easily be carried from room to room. And the compartments inside the box will accommodate a few tools and a nail-box.

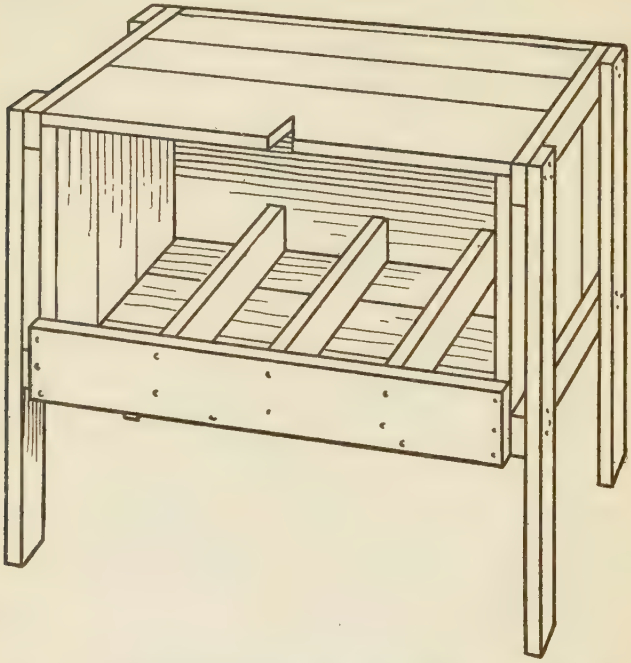


FIG. 7. BOX BENCH FOR ODD JOBS AND COPING-SAW PROBLEMS

This type of work-bench is also a good individual bench for use in Daily Vacation Bible Schools, for coping-saw problems. As it is easily made of inexpensive materials, a number of them might be provided for class work.

Use a Packing Box that is strongly made of good

material and if any of the boards show signs of loosening, reënforce the nailing. Also, procure four ⅞ inch by 3 inch strips for legs, and several additional strips for compartment partitions. The ordinary height of a work-bench is 32 inches, but this

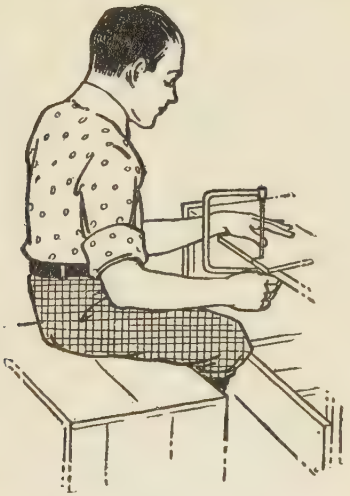


FIG. 8. THIS IS THE WAY TO USE THE COPING-SAW ON THE BOX BENCH

can be regulated to suit one's height. If the bench is to be used for coping-saw work, it can be of table height, and the boy working at it can sit on a box stool, as suggested in Figure 8. Saw a V-shaped notch in the front edge of the top (Fig. 7) for the coping-saw to work in. The piece to be sawed can be placed over the notch, and will be supported on both sides of the saw. Fasten a board across the front of the box, and partition the inside into compartments as shown.

A TOOL BOARD

The board in Figure 9 will accommodate a small tool outfit such as should be on hand in a church building for odd jobs. The outfit suggested consists of a cross-cut saw, hatchet, hammer, bit-brace and

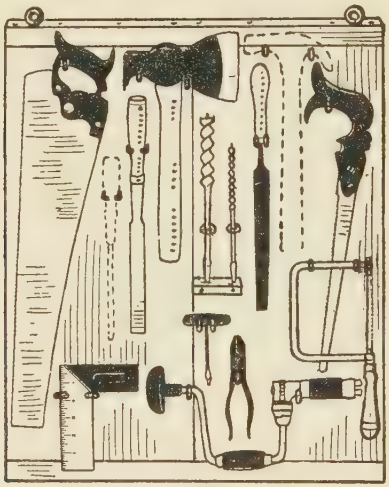


FIG. 9. A TOOL-BOARD

two sizes of bits, hand gimlet, chisel, screw-driver, file, pliers, try-square, coping-saw and keyhole-saw. In addition to these tools there should be a plane, but this should be kept upon a shelf as it is a tool that cannot be hung up very well. If every tool is kept in its place, the board will be found convenient. Occasionally a tool will be missing or hung on the wrong hooks. A good plan is to draw an outline of each tool upon the board, as suggested by dotted

lines in Figure 9, then a person can see at a glance what tool is missing, and borrowers can see where to hang tools when they return them.

The Size of the Board will depend on the number of tools to be provided for and their lengths. The best way to arrive at the dimensions is to take all of the tools and arrange them upon a table in some such way as the diagram of Figure 9 suggests. By careful planning you will see how the tools can be fitted close together so little space is lost.

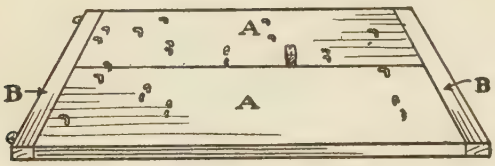


FIG. 10. DETAIL OF TOOL-BOARD

Build Up the Tool-board of boards A, as shown in Figure 10, fastening these together with end battens B. The number of boards to use will depend on the width of the tool layout, and upon the width of the boards you can get. If you use boards ⅞ inch thick, battens B can be nailed to the board ends, but if you use box boards ½ or ⅜ inch thick, the battens should be fastened to the back of the boards and the nails driven through the battens and the boards and clinched.

Hangers. Screw-hooks, or nails with large heads, should be used for hangers for the tools (Fig. 10). Long, slim tools like wood-bits cannot be supported in a vertical position as easily as tools with handles.

You can provide screw-eyes or staples to support the upper part of these and a block to support the lower ends (Fig. 9).

AN ODD-JOB NAIL-BOX

Tacks, brads, nails, screws, screw-eyes, picture-hooks, and other small hardware would often bring a premium if they could be produced at the psychologi-

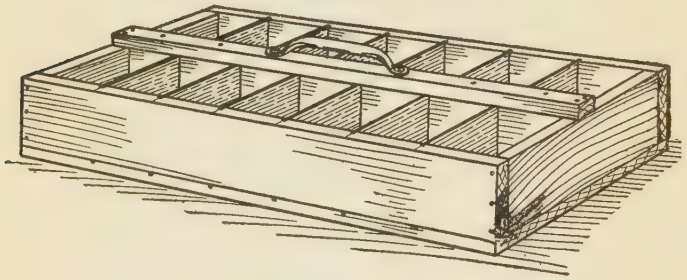


FIG. 11. A HANDY NAIL-BOX

cal moment when a committee is on hand to decorate the church or Sunday school room. Some one always knows that the desired tacks or nails are somewhere but somewhere is too indefinite. The odd-job nail-box shown in Figure 11 will be easier to find than a box of 4-oz. upholstering tacks. Its fourteen compartments will take care of most of the sizes of small hardware used for odd jobs.

The Parts. Box boards ⅜ inch thick can be used for the box. A pattern for the bottom is given in Figure 12, a pattern for the sides in Figure 13, and a pattern for the ends in Figure 14. The double

lines on the patterns of the bottom and side pieces indicate saw slots made to receive the edges of the partitions. Locate the slots in the places indicated and cut them ⅛ inch deep.

Fig. 13

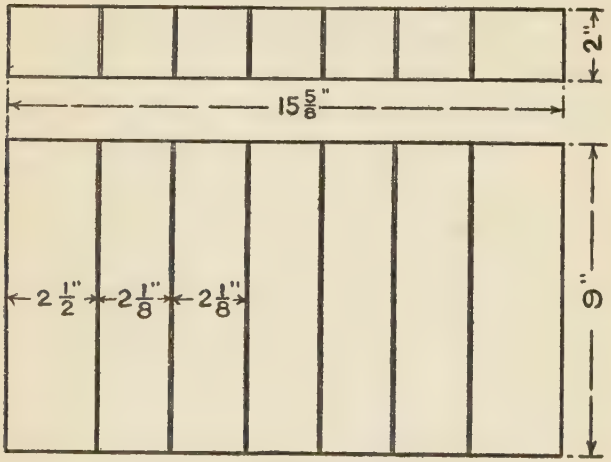


Fig. 12

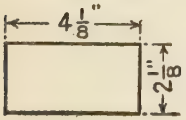


Fig. 15

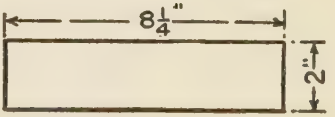


Fig. 14

FIGS. 12-15. PATTERNS FOR THE NAIL-BOX

In Assembling the Box, nail together the side and end pieces first, then nail the bottom board to their edges.

The Compartment Partitions are of tin. Cut them out of tin cans, with tinsnips, or an old pair of shears. Figure 15 is a pattern for these pieces.

Slip the partitions into the slots cut for them, and fasten them in place with a center strip of wood wide enough to lap half an inch over their inside ends. To this center strip screw a drawer-pull or window sash-lift at the center of its length for a handle to carry the box by.

Finish the Box with a coat of shellac, paint, or wood-stain.

Chapter II

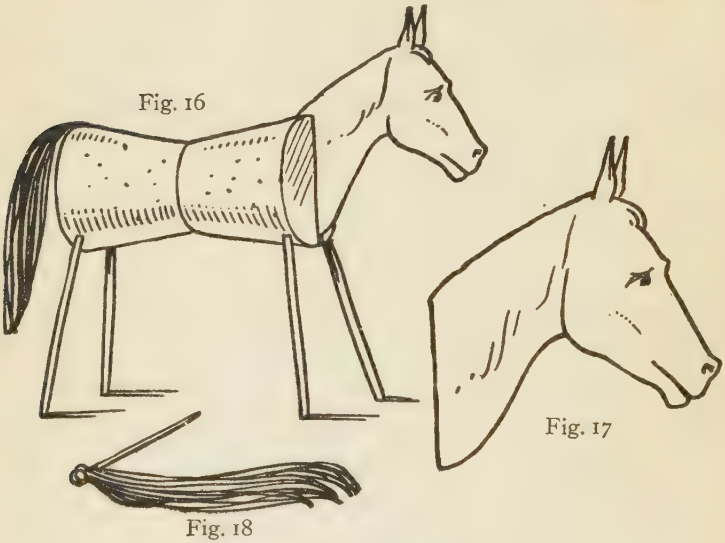
TOY PROBLEMS FOR THE DAILY VACATION BIBLE SCHOOL

Cork Toys: A Horse—A Porcupine—A Pig—A Pigrich Bird—A Duck—A Teeter—A Bed—A Chair—A Table—Pots for Toy Plants—A Javelin.
Pendulum Toys: The Seasick Landlubber—The Ouija Bird.
Tumble Toys: Tumble Tom's Trick Ladder—Topsy Turvy Blocks.

You boys may think some of the ideas presented in this chapter too elementary in character for a boy's book of handicraft but bear in mind that this is first of all a book of service. Maybe your younger brother or sister will want to make some of the simpler things in the Daily Vacation Bible School, and you can lend such assistance as is needed. In fact, if you are beyond the age for attending the Daily Vacation Bible School, you might render valuable assistance to the school leaders by helping with the handicraft instruction.

There is a growing feeling among teachers of the Daily Vacation Bible Schools that the handicraft activities of the boy and girl pupils should not be confined to toys and other things made solely for play, because the real purpose of the work is lost sight of, and the child looks upon the program as only a means to add to his possessions. It is true

that there is danger of encouraging selfishness by making too much of the "make your own toy" idea. It is better to include material that will be of service to others—mother, father, the church, Sunday school, and the community. In following chapters and in



FIGS. 16-18. THE HORSE

"Home Mechanics for Boys," much material will be found for a varied program—large articles for groups to make, small articles for individuals. But toy-making should not be eliminated from the program. Handled in a proper manner, there need be no cause for criticism. The work can be done in a wholly unselfish spirit. The toys need not be retained by the makers, but may be given to missions, sold at the close of the vacation school and the re-

ceipts given to charity, sold at the toy or handicraft booth at the holiday bazaar of the churches the children attend, or given to poor children at Christmas

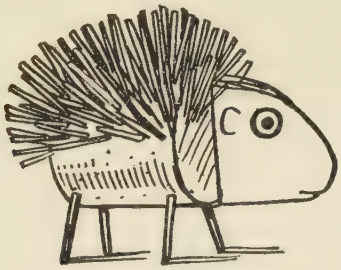


FIG. 19. THE PORCUPINE

time. And will it not be a more unselfish act for the child to give away the toy that he has made, and in which he sees possibilities of fun, than some other piece of handicraft designed for grown folks to use?

FIG. 20. PATTERN FOR THE HEAD OF THE PORCUPINE

CORK TOYS

This line of toys has always appealed to me as among the most fascinating to make, and they interest young and old alike. When I was a lad, my brother and I made a whole menagerie of cork animals for the church bazaars of two successive years,

and they sold like hot cakes; everybody wanted to take home as a souvenir one of the curiously formed creatures with gilded bodies. About this time, too, I told how to make these animals and other cork objects in my first handicraft article "Cork Toys," published in "The Chicago Record." Since then I have explained the work in books and in magazine articles, so perhaps your parents have made the toys, perhaps you have made them in a vacation school

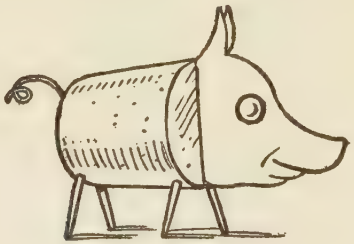


FIG. 21. THE PIG

where these books and articles have been used. But new ideas included among the following suggestions will be worthy of notice.

CORKS AND OTHER WORKING MATERIALS

Corks for toy making may be saved from emptied bottles, but this source of supply need not be depended upon entirely, for corks can be bought inexpensively at drugstores and ten-cent stores. In addition to corks, there must be some cardboard (box cardboard will do), yarn, beads, toothpicks, burnt matches, pins and glue. For cutting the corks use a sharp knife or a coping-saw.

CORK ANIMALS

The Horse (Fig. 16) has a body made of two tapered corks, with the small ends glued together. Use the pattern in Figure 17 for the head, and glue this

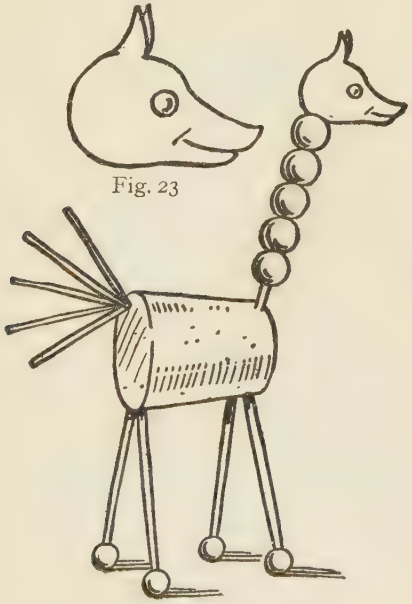


Fig. 23

Fig. 22

FIG. 22. THE PIGRICH BIRD
FIG. 23. PATTERN FOR HEAD FOR THE PIGRICH BIRD AND THE PIG

in a slot cut across the end of the body. The legs may be toothpicks or matches; glue them in holes in the cork body. The tail is made of several strands of yarn tied to a pin (Fig. 18), and the pin is stuck into the body.

The Funny Porcupine (Fig. 19) has a tapered cork body, toothpick legs, a cardboard head (Fig. 20) and toothpick quills.

The Pig (Fig. 21) may be made in the same way, omitting the quills, making a head like the pattern (Fig. 23) and using a piece of wire for a tail.

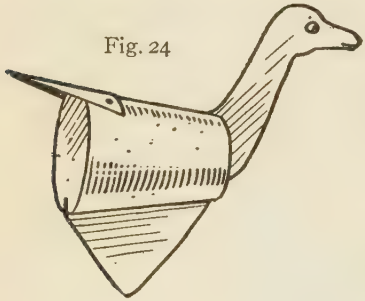


Fig. 24

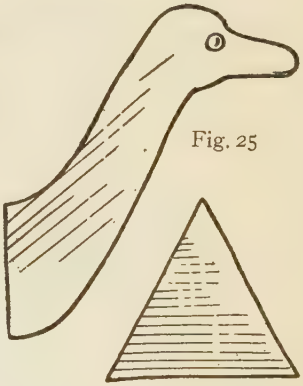


Fig. 25

Fig. 26

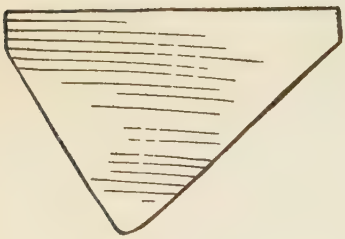


Fig. 27

FIGS. 24-27. THE DUCK

Because cork birds and animals are funny creatures at best, it is proper to devise varieties other than those found in zoos. With a little thought all sorts of specimens can be produced.

The Pigrich Bird (Fig. 22) is a peculiar specimen. Isn't he a dandy with his ornamented neck? Five glass beads strung upon a toothpick form the neck,

the cardboard head (Fig. 23) sticks upon the toothpick neck, and the toothpick legs have beads glued upon their ends.

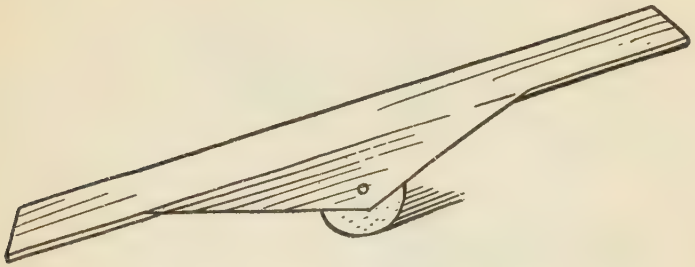


FIG. 28. A TEETER FOR THE CORK CIRCUS

The Duck (Fig. 24) is one of the many floating toys which can be made. Figure 25 shows the head and neck, Figure 26 the tail, and Figure 27 the keel

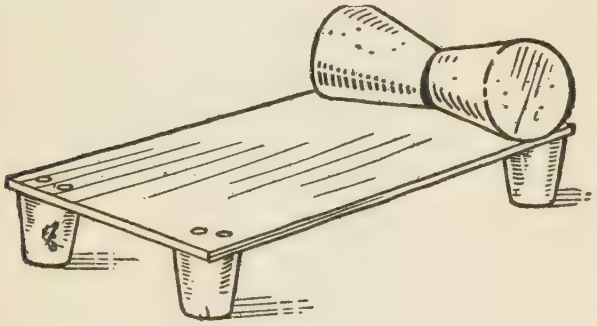


FIG. 29. A BED

fastened to the under side of the body to prevent upsetting. The keel should be a piece of cardboard coated with paraffin or a piece of tin.

The Teeter. Figure 28 shows a teeter for a cork animal circus. The strip of cardboard used for the

teeter is bent down at the edges and pinned to the ends of a straight cork. Holes may be punched for the animals' legs to stick in.

CORK FURNITURE

Enough cork furniture can be devised to furnish a doll's house.

Fig. 30

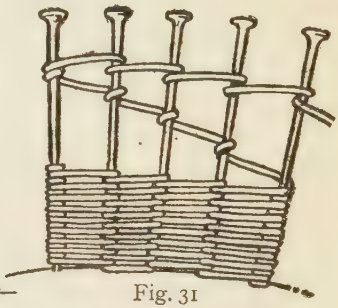


Fig. 31

FIGS. 30 and 31. A CHAIR

A Bed. Figure 29 shows a bed. This has a cardboard mattress, cork feet, and a pillow made of two tapered corks.

A Chair. You will not deny that the chair in Figure 30 has style. The seat is a pickle bottle cork; the legs and back are made of long pins wound with

yarn. Figure 31 shows how to weave the yarn around the pins of the chair-back.

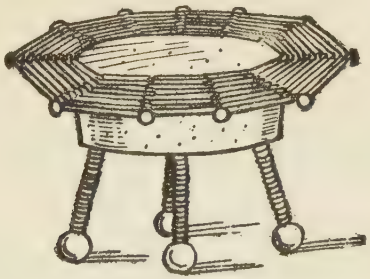


FIG. 32. A TABLE

The Table in Figure 32 has a pickle bottle cork top, with pins stuck around its edge. Upon the pins

FIG. 33. A POT FOR A TOY PLANT

yarn is woven in the same manner as the chair-back. The legs are pins with glass beads slipped onto them and pushed down to the heads, and they are wound with yarn.

Pots for Toy Plants. Tapered corks make excellent pots for a doll-house (Fig. 33), and the plants can be made of paper, or pieces of artificial fern may be used.

A CORK JAVELIN

If you have never made a cork javelin to toss at a target, you have missed a lot of fun. Figure 34

FIG. 34. A JAVELIN

shows how to make one by inserting a needle in the bottom of a tapered cork, and a feather in the top.

PENDULUM TOYS

The Seasick Landlubber Toy. This mechanical toy, shown in the photographs of Figures 35 and 36, is adapted from a pen-tray designed and made dur-

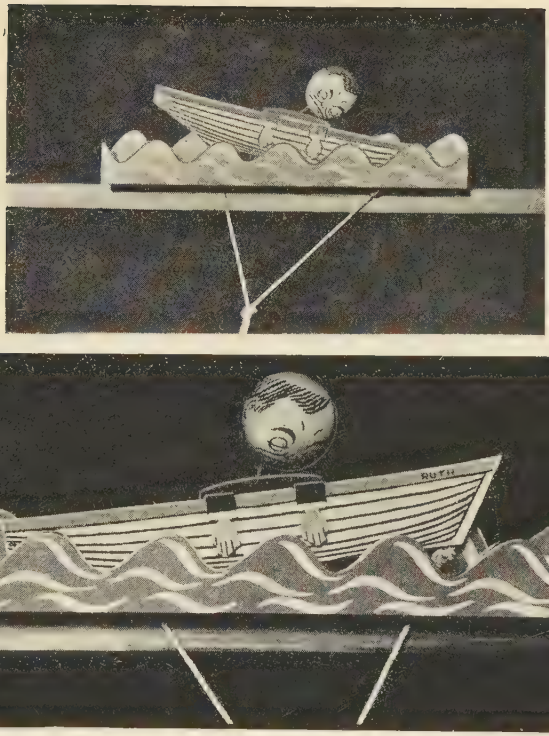
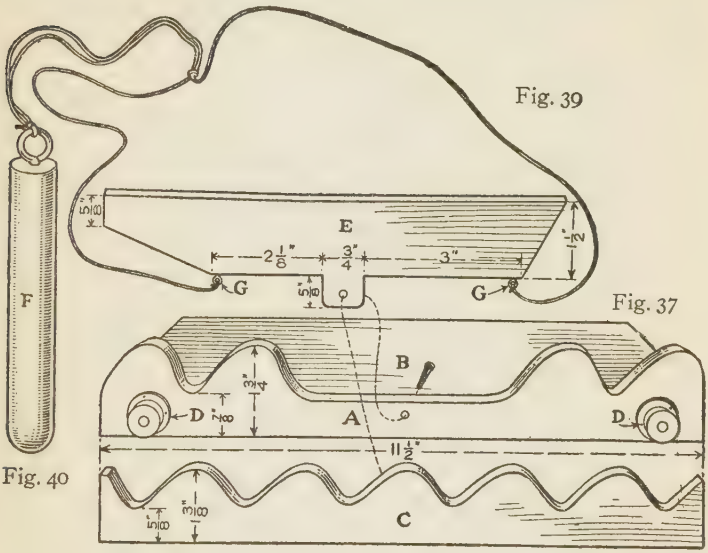


FIG. 36. THE MAN, BOAT AND WAVES ARE EASILY WHITTLED OUT

FIG. 35. THIS SEASICK LANDLUBBER TOY IS OPERATED BY A PENDULUM

[*Facing page* 32

ing the war by a disabled soldier of the Lord Roberts Memorial Workshops, London, England. The original, in my possession, is one of the most comical models I have seen and I believe that this mechanical



FIGS. 37 AND 38. DETAILS OF WAVE STRIPS
FIG. 39. THE LANDLUBBER'S BOAT
FIG. 40. PENDULUM FOR ROCKING THE BOAT

adaptation, shown in the illustrations, will prove a most interesting toy to you boys. Place it on a mantel shelf, on a bookcase, or on a bracket fastened to a wall, so the pendulum and suspending cord swing free and clear, and it will become a permanent source of fun, a novelty each visitor to your home will enjoy.

This might be called a jack-knife model, because practically all of its parts can be whittled.

The Waves are made of two strips cut from a box board ⅜ inch thick. Figure 37 shows one strip (A) and Figure 38 the other (C), with dimensions for laying them out. Scallop the tops as shown, to form waves.

The Rowboat is also a piece of box board. Lay it out by the pattern of Figure 39. Notice that the upper edge of this block curves slightly between bow and stern. Pivot the boat between the wave strips on a screw driven through strip A, slipped through a hole in the hull a trifle larger than the screw, and driven part way into strip C. Spool halves D (Fig. 37) are separators fastened between the ends of the wave strips. Place iron washers on the screw pivot each side of the boat. Nail strip A to base block B, a block 5 inches wide by the length of the strip.

The Pendulum is a piece of broom-handle 8 inches long with a screw-eye screwed into one end (F, Fig. 40). Use heavy cord for the suspension cords. Double a piece 54 inches long, loop it through the screw-eye in the end of the pendulum, and tie the end to a pair of screw-eyes of the size used on the back of small picture frames, screwed into the hull of the boat at points G (Fig. 39). Join the cords 6 inches below the boat hull as shown in the photograph of Figure 35.

The Landlubber has a shoulder block (H, Fig. 41), head (I), spiral-spring neck (J, Fig. 42), and arms and hands (K, Fig. 43). Cut shoulder block H by the pattern in Figure 41. Tack it to the center of the

back of the boat so it appears above the boat as shown in the photograph.

His Head. Cut a block of soft pine 1¾ inches square for the head block (Fig. 44). With your knife cut off the corners as shown in Figure 45, then continue cutting until the corners are rounded and the block becomes spherical. When you are satisfied

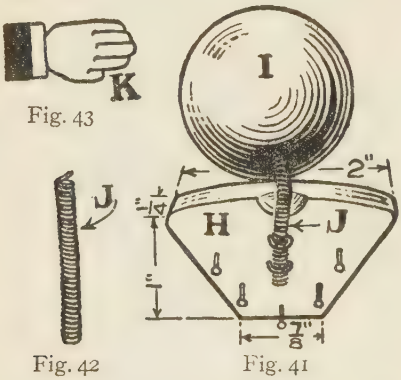


Fig. 43 Fig. 42 Fig. 41

FIG. 41. DETAIL OF HEAD AND SHOULDER
FIG. 42. SPRING FOR NECK
FIG. 43. HAND

that you have a perfect sphere, rub up the surface with sandpaper until smooth. Figure 46 shows the completed head. Suggestions for painting will be given later.

His Neck is a spiral spring 1¼ inches long. Get a piece of spring brass wire of fine gauge, and wind it about a ten-penny common nail, pushing the turns close together, until the coil of the desired length has been obtained (Fig. 42). If you cannot get spring brass wire at your hardware store, buy one of the

spiral brass curtain-rods that sell for 5 cents at the five-and-ten-cent stores, and cut a piece off one end. A section of one of these springs was used in the model illustrated. Drill a hole ½ inch deep in the head, to receive the spiral spring. Attach the other end of the spring to shoulder block H with small staples, as shown in Figure 41. Cut a notch in the edge of the block, as shown, for the spiral to rest in.

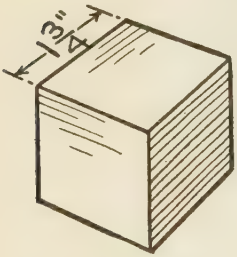


Fig. 44

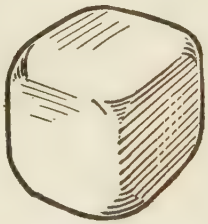


Fig. 45

Fig. 46

FIGS. 44-46. HOW TO WHITTLE THE HEAD OUT OF A BLOCK OF WOOD

His Hands should be cut by the pattern in Figure 43. Fasten them to the side of the boat with glue and short brads.

You have been told how to assemble each part as prepared. But the assembling should only be done for the purpose of seeing that parts fit properly, for all parts must be separated for painting.

Finishing. Several colors should be used for finishing. Enamel paints are best, and these can be purchased in quarter-pint cans. Two coats will be necessary to cover perfectly. The waves should be a light blue with the crests indicated in white. The

boat should be white, striped with black to indicate seams. A band of red should be added to the upper edge. The seasick landlubber's head should be grayish white, made by mixing a bit of black in white paint. Features and hair should be indicated with

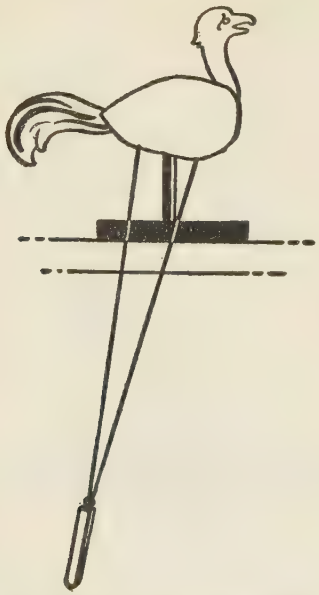


FIG. 47. THE OUIJA BIRD ROOSTS WELL UPON A MANTEL SHELF

black paint. Follow the diagram in Figure 46 in marking the features. The base block (B) should be painted blue, the pendulum (F) red. Allow surfaces to dry twenty-four hours before assembling parts, so the paint will be perfectly dry.

When the seasick landlubber model is completed, you may find adjustment of the neck necessary to

give the head a realistic poise. If you have been on a rough sea you may know all about it.

The Ouija Bird roosts well upon a mantel shelf or plate-rail, where its pendulum is free to swing (Fig. 47). Note that the pendulum causes the head and tail to move. You do not have to be an artist to make

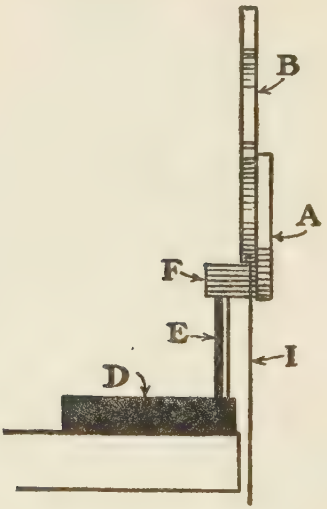


FIG. 48. CROSS-SECTION OF THE TOY

the bird. You can cut it of any shape or size you want. In the detail drawing (Fig. 49), A shows the body, B the head and neck, and C the tail. The neck and tail are pivoted to the back of the body with tacks, at the points G, and strings I are attached to tacks driven at points H, and are tied to a screw-eye in the end of a piece of broom-handle J (Fig. 50) which forms the pendulum.

The Toy Is Mounted upon a board base D (Figs. 48 and 49), by means of a round stick E, one end of which is glued in a hole bored in base D, and the

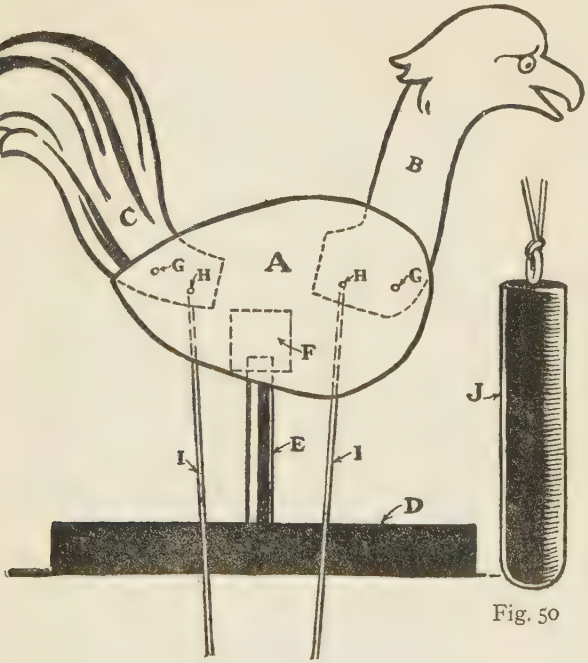


Fig. 49

Fig. 50

FIG. 49. DETAILS OF OUIJA BIRD PENDULUM TOY
FIG. 50. BROOM-HANDLE PENDULUM

other in a block F, which block is fastened to the back of the body.

Paint the Parts before assembling them. Here you will have opportunity to execute something unusual in plumage.

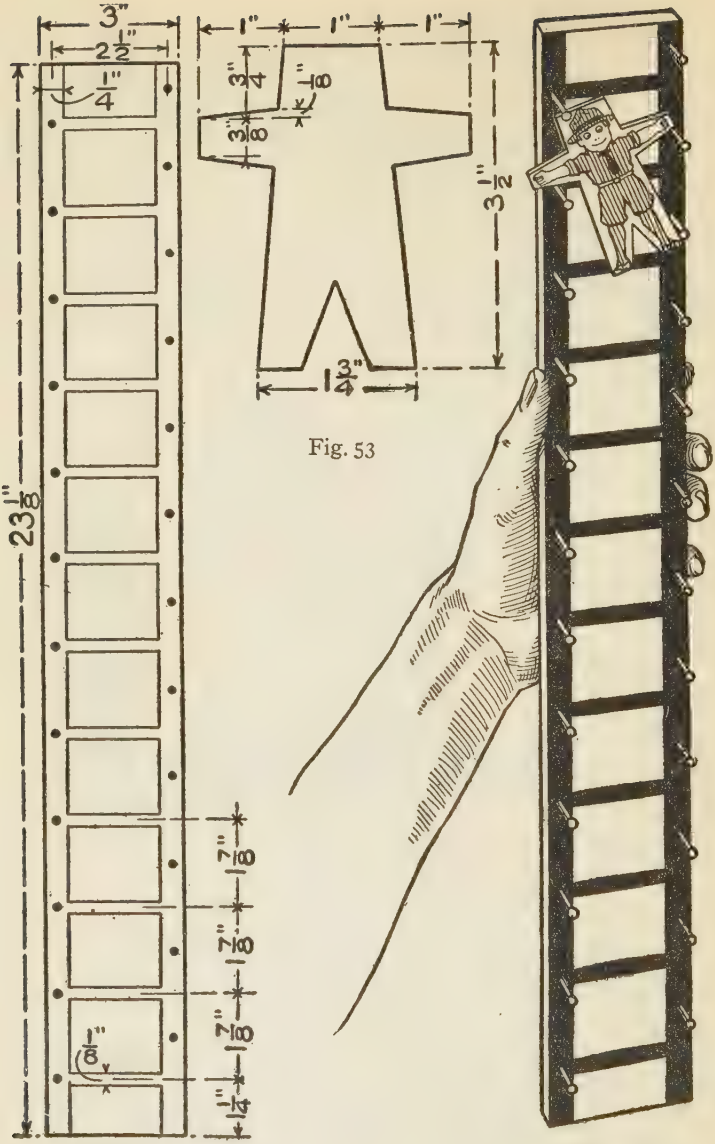


Fig. 53

Fig. 52

Fig. 51

FIG. 51. TUMBLE TOM AND HIS TRICK LADDER
FIG. 52. PATTERN FOR LADDER
FIG. 53. PATTERN FOR TUMBLE TOM

TUMBLE TOYS

A hammer and a pair of scissors are the only tools required to make these tumble toys, and the material can be found in every household.

Tumble Tom's Trick Ladder (Fig. 51) is made of a stick 3 inches wide and a trifle longer than 23 inches (Fig. 52). If you find a piece of wood wider and longer than these dimensions, it will not be necessary to cut it down. The rails and rungs of the ladder can be drawn with the spacing indicated on the diagram of Figure 52, and whatever additional width and length remain can be left as margins. Use a ruler and pencil to mark off the ladder. First, draw the side rails, then along them lay off the spacing for the rungs and draw a pair of lines for each.

Along one rail, opposite each rung, drive a brad or nail ¾ or 1 inch long (Fig. 51), and in the other rail drive a brad or nail halfway between each pair of rungs. This completes the ladder.

Tumble Tom may be drawn from the model shown, or you can use a picture cut from a magazine. The picture must be drawn or pasted upon a piece of cardboard cut of the shape and size shown in the diagram of Figure 53.

How the Toy Works. Figure 51 shows the start of Tom's tumble. If the arms are cut as shown, they will slip off the nails alternately, and Tom will descend rapidly to the bottom. If you wish, you can prepare two or three tumblers and start one after another down the ladder.

The Topsy Turvy Blocks shown in Figure 54 de-

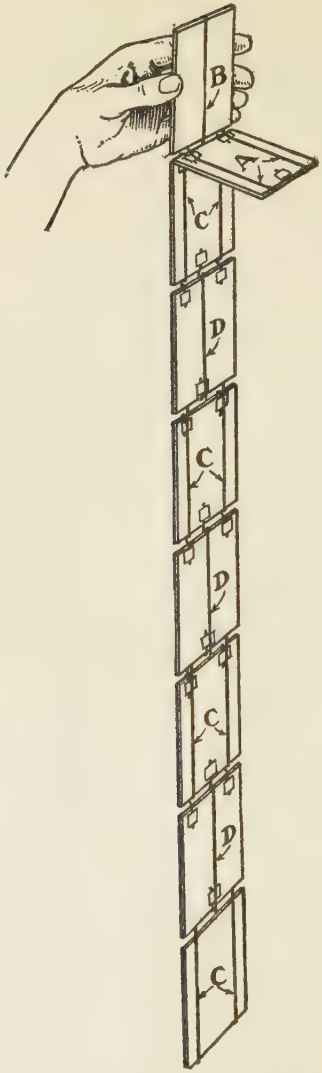


FIG. 54. THE TOPSY TURVY BLOCKS

ceive the eye. Apparently the block next the top tumbles from its place to the bottom of the string, but in reality it simply turns topsy turvy and each succeeding block does likewise.

The String of Blocks can be made as long as you wish. Eight or nine is a good number. They may be cut out of thin wood but the set shown in Figure 54 is of cardboard, which is easier and quicker to cut. Figure 55 shows a good size to make them.

The blocks are connected with pieces of heavy linen thread. Each block requires three threads, except one end block which requires none. Cut the threads 4½ inches long. For fastening the threads to the cards, cut gummed paper or adhesive tape into small pieces. The gummed flaps of envelopes may be used.

To Assemble the Blocks, first stick three threads to all blocks except one, placing one thread at the center of one end and two near the edges at the other end, as shown in Figure 56. When the threads have been attached, it is only necessary to connect the other ends to adjoining blocks. You will readily understand how this is done by studying the diagrams of Figures 57 and 58, which show opposite faces of the blocks. Letters A and B represent the threads upon alternate blocks, and letters C and D represent the threads on the intermediate blocks. You will notice that all of the A and B thread ends are fastened to the same face, and all of the C and the D thread ends to the opposite face. Turn the blocks about so that the ends will come as shown, compare the model with the diagrams to be sure that

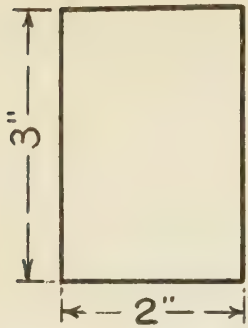


Fig. 55

Fig. 56

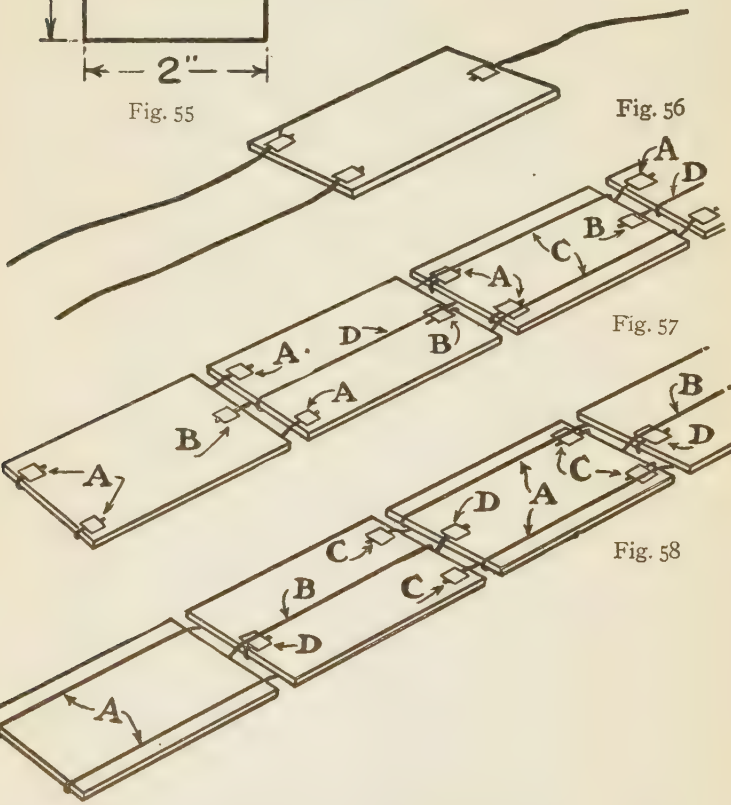


Fig. 57

Fig. 58

FIG. 55. PATTERN FOR BLOCKS
FIG. 56. FASTEN THREADS TO EACH BLOCK IN THIS MANNER
FIG. 57. ONE FACE OF THE ASSEMBLED BLOCKS
FIG. 58. REVERSE FACE OF THE ASSEMBLED BLOCKS

each block is placed correctly, and then fasten the thread ends. Leave a space of ⅛ inch between the blocks.

To Start the Blocks Tumbling, hold an end block with one hand and turn it over endwise. Doing this will cause the second block to turn over as shown in Figure 54. The tumbling second block will cause the third block to turn over, and so on down to the end of the string.

Chapter III

HANDICRAFT FOR THE CHURCH BAZAAR

A Whisk-Broom Holder—Candle-Sticks—A Thermometer Board—A Calendar-Board and Pen-Rack—A Post-Card Rack—A Clock-Shelf—A Broom-Holder—A Holder for Safety Matches.

Handicraft mentioned in connection with bazaars suggests fancywork, because that is what we find at handicraft booths, as a rule. It is the work of the ladies and girls of the church and Sunday school, not of the boys, however. You haven't been called upon to serve in any way, have you? You haven't even "carried water for the elephants," so to speak, for an admission ticket. Why are you and the other boys not asked to contribute? I will tell you why. It is because no one has an idea of your ability to supply a line of saleable articles. Let the bazaar committee see what you can do, and ask them to allow you to demonstrate your ability to sell articles that you make, in a boys' handicraft booth, and there will be no danger of your not being invited to serve in the same way each succeeding year.

THINGS TO MAKE

There are an unlimited number of articles that you can contribute to the holiday bazaar. Half a

Fig. 59

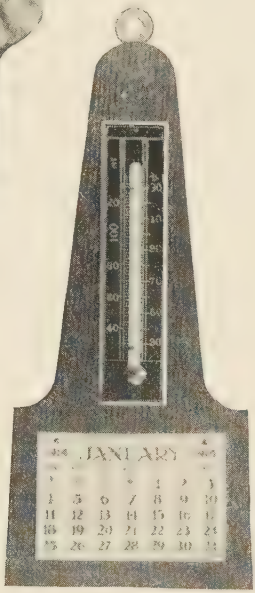


Fig. 61

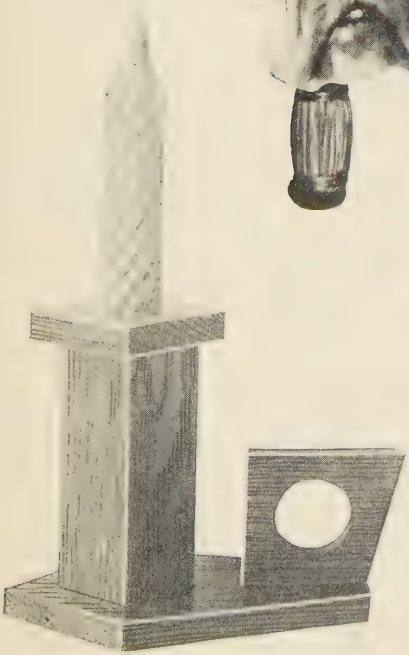


Fig. 60

FIG. 59. A WHISK-BROOM HOLDER DECORATED WITH A PASTED PICTURE
FIG. 60. A CANDLE-STICK
FIG. 61. A THERMOMETER BOARD

[*Facing page 46*

dozen ideas or more are presented in this chapter, others in succeeding chapters, and additional material will be found in "Home Handicraft for Boys" and my other books. The articles selected should be small, so they will not require much time to make, or much material, and so they can be sold cheaply.

WORKING MATERIALS

Cigar-boxes can be had for the asking at a drug-store. They furnish good small pieces of wood that take finish nicely. Grocery boxes, selected carefully, and packing-boxes, like those in which paint-stores receive their goods, can also be used to advantage. Ends of various kinds of wood can often be procured for little or nothing at mills, factories and carpenter shops.

Glue, nails, screws, and other small hardware needed in the work will be a small cost item; also, paint, wood-stain, shellac and varnish which can be bought in small-sized cans.

A WHISK-BROOM HOLDER

You don't have to be an artist to make things decorative. An example of how you can decorate your work with pictures is shown in the photograph of the whisk-broom holder (Fig. 59). The bulldog's head in the picture on the front of the holder was cut from a calendar. You will find plenty of suitable pictures on calendars and magazine covers, and it is no trick to cut them out and glue them to a surface

of the article you are making. When the picture is of the right size, its outline can be followed in sawing out the piece upon which it is to be mounted, as was done in the case of the front of the whisk-broom holder. This makes a unique design. If, however, the picture is too small, a margin will have to be left around it. The picture used for the whisk-broom holder measures 7 inches up-and-down and 5½ inches across, which is just right. These dimensions may be varied somewhat, if you find a picture of different proportions.

The Front of the Holder. Cut out the picture carefully, cutting just outside the outline so the line will be left on the picture. Then place the picture upon the piece of board to be used for the front of the holder, mark around it with a pencil, saw out the piece, trim up the edges where necessary with knife or chisel, and smooth with sandpaper. Do not glue the picture to the piece until after the holder has been assembled and finished.

The Other Parts. Figure 62 shows a cross-section of the bull-dog whisk-broom holder, with the head (A) drawn in full outline, the back (B) in dotted lines, and the end pieces (C) in cross-section. Figure 63 shows a pattern for the back. If the front of your holder is a different width (the model is 5½ inches) you may have to change the width of the back piece. Figure 64 is a pattern of the end pieces.

Assemble the Parts with nails and glue. Screw a pair of screw-eyes into the top edge of the back piece for hangers.

Finishing. The model illustrated was finished

with one coat of flat white paint (paint mixed without linseed oil) and two coats of white enamel. This is the best finish for a whisk-broom holder that is to hang in a bedroom. If you prefer to stain the holder, follow staining with a coat of shellac, then wax the surfaces. When the finish has dried, coat

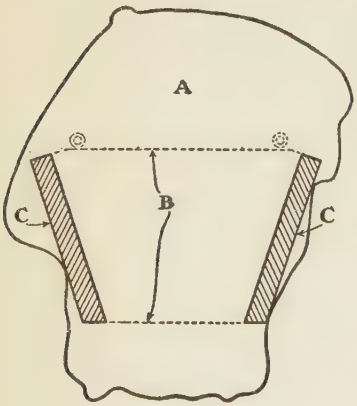


Fig. 62

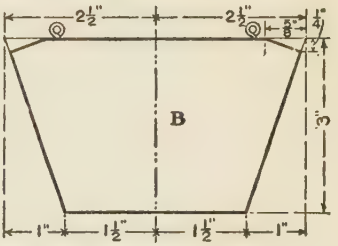


Fig. 63

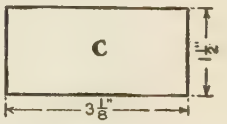


Fig. 64

FIG. 62. CROSS-SECTION OF THE WHISK-BROOM HOLDER SHOWN IN FIGURE 59

FIGS. 63 and 64. PATTERNS OF BACK AND END PIECES

the front of the holder and the back of the picture with glue, put the picture in place, rub down the surface with a cloth, and weight it with books until the glue has set.

CANDLE-STICKS

Candle-sticks are in vogue now and can be sold in pairs or singly. Most people like to have a pair of them on the mantel-shelf. Make a lot of them for the

holiday bazaar for you will have no difficulty in disposing of them. The design shown in the photo-

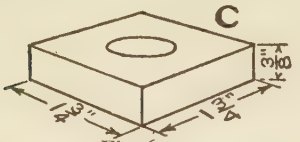


Fig. 67

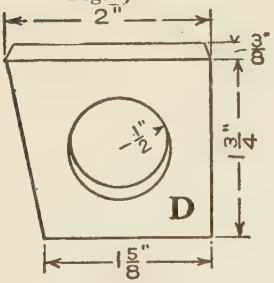


Fig. 68

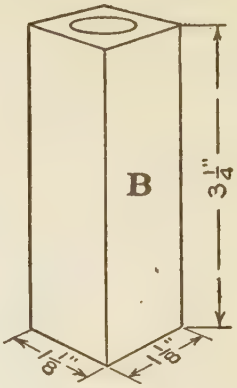


Fig. 66

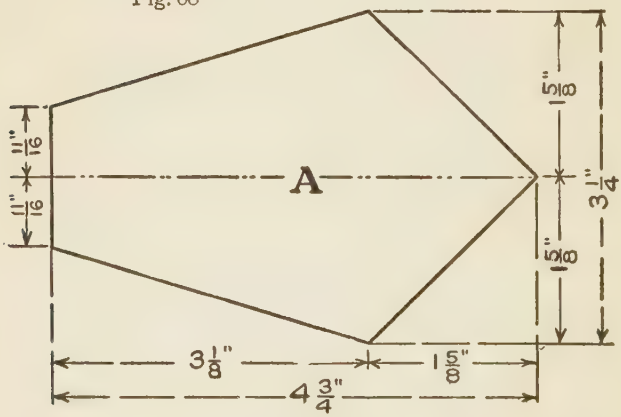


Fig. 65

FIGS. 65-68. PATTERNS FOR CANDLE-STICK SHOWN IN FIGURE 60

graph of Figure 60 is an attractive one that is easily executed.

The Parts. Working-drawings for the parts of the candle-stick are given in Figures 65 to 68. Part A is the base, B the upright, C the cap block, and D the handle. Block B must be cut out of 1⅛ inch stock; ⅜ inch stuff is right for the other blocks. If you are going to make up a number of the candle-sticks, it will save time to buy strips 1⅛ inches square and saw them into the right lengths for blocks B, and to buy strips 1¾ inches wide to saw up for cap and handle blocks C and D. To save waste, base blocks A can be marked off on a board by turning your pattern first one way, then the other, and fitting the slanted edges together.

Cutting. Cut the pieces carefully. You may be inclined to hurry the work, in making a number of the candle-sticks; but don't for the sake of your reputation. Bore the holes in handle blocks D before cutting the blocks, to avoid splitting the wood. When all parts have been cut, smooth them with No. 00 sandpaper.

Assembling. Use glue and 1-inch brads for assembling the parts. If oak or other hard wood has been used, start holes for the brads with a brad-awl or wood-drill.

A THERMOMETER BOARD

This little novelty, shown in the photograph of Figure 61, has a back of the shape and size shown in the pattern of Figure 69. Small thermometers can be procured through a jeweler in your town. One 4 inches long will cost about thirty cents. Small

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calendar pads can be bought at most stationery stores the latter part of the year. They sell at two or three cents apiece, or less in quantity.

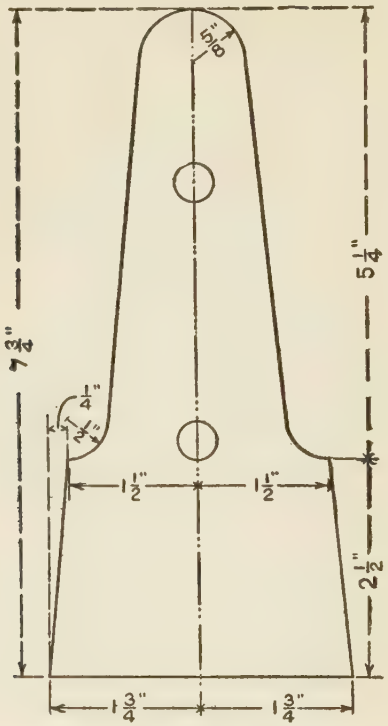


FIG. 69. PATTERN FOR THERMOMETER BOARD SHOWN IN FIGURE 61

The Board. In laying out the thermometer board and other pieces, the opposite edges of which are alike, it is well to draw a center-line on the piece of work, and mark off the measurements each side of it. One side can be drawn, then a tracing made of

it, the paper reversed, and the outline transferred to the opposite side of the center-line.

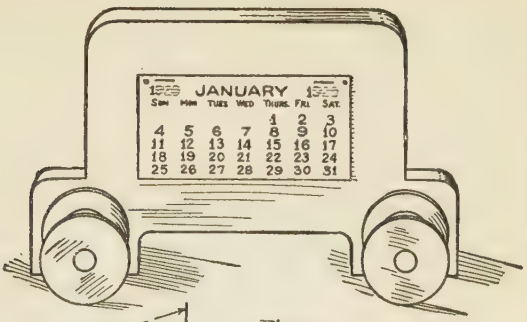


Fig. 70

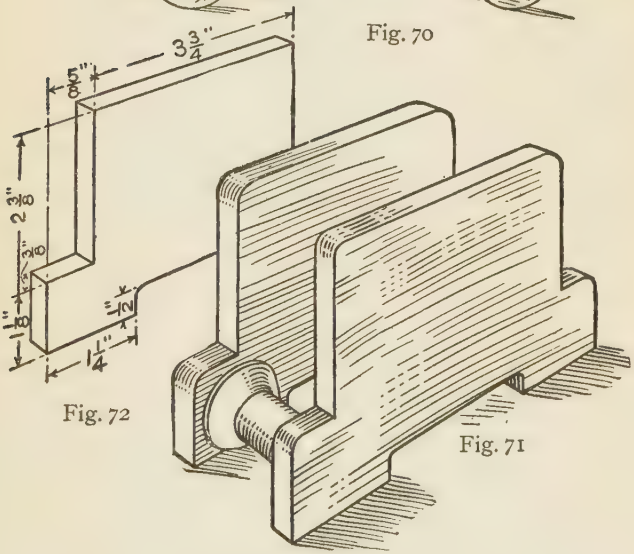


Fig. 72

Fig. 71

FIG. 70. A CALENDAR-BOARD AND PEN-RACK
FIG. 71. A POST-CARD RACK
FIG. 72. PATTERN OF BOARD FOR THE PEN-RACK AND THE POST-CARD RACK

Assembling. The two circles shown on the calendar board diagram are shallow holes provided as

recesses for the thermometer bulb and upper tip of the tube to set in. Drive a screw-eye into the top of the board as a hanger. Tack the thermometer and calendar pad to the board after the wood has been finished, using small round-head brass nails for the purpose.

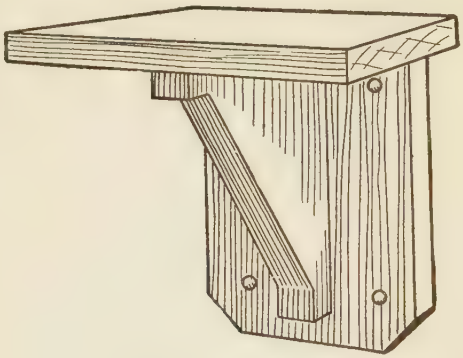


FIG. 73. A CLOCK-SHELF

A CALENDAR-BOARD AND PEN-RACK

The little calendar-board and pen-rack shown in Figure 70 requires a piece of board of the dimensions given on the pattern of Figure 72. Round the corners as shown in Figure 70. A pair of thread spools fastened to each side of the calendar board form a base. The front pair make the pen and pencil rack. You can nail the spools to the board; or you can bore a pair of holes through the board, drive a dowel-stick through each hole, and glue spools upon the stick ends.

A POST-CARD RACK

The post-card or stationery-rack in Figure 71 requires two pieces of the shape of the calendar-board. The pieces are connected by a pair of spools. Bore ¼-inch holes through the end pieces, and run dowel-sticks through the holes and the spool holes.

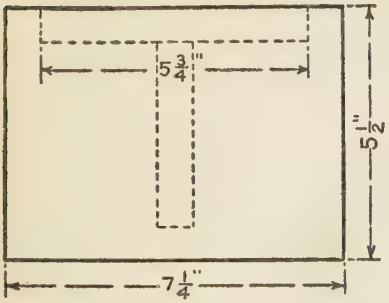


Fig. 74

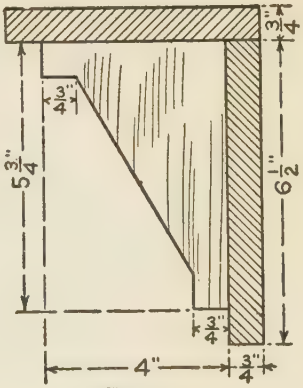


Fig. 75

FIGS. 74 and 75. PATTERNS FOR TOP AND BRACKET

A CLOCK-SHELF

The bracket shelf in Figure 73 is suitable for a kitchen or bedroom. It is made of three pieces, a shelf, back board and bracket. Dimensions of the pieces are shown in Figures 74 and 75. Saw off the lower corners of the back piece (Fig. 73). Nail the shelf to the top edge of the back piece, and fasten the bracket to both. Bore holes through the back piece to provide for screwing the shelf to a wall.

A BROOM-HOLDER

Figure 76 shows a broom-holder. Cut the bracket block by the pattern of Figure 77. Cut the back

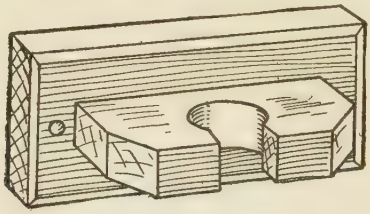


FIG. 76. A BROOM-HOLDER

board 3½ inches wide and 7 inches long, bevel its four edges as shown in Figure 76, and bore a hole near each end for screws. Nail the back to the edge of the bracket block.

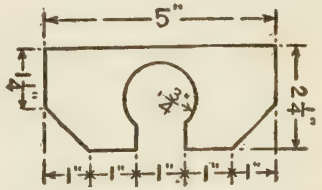


FIG. 77. PATTERN FOR BROOM-HOLDER

A HOLDER FOR SAFETY MATCHES

This makes the simplest match-box I know of, and it is a practical one. I devised the holder two years ago for my troop of Boy Scouts to make for their Christmas Gift Shop, and the boys sold dozens of them. It makes a good holder beside the kitchen range or near the laundry stove or furnace in the

basement. Urge your customers to buy them in half dozen lots.

Marking and Cutting the Blocks. Figure 78 shows the holder with match-box in place, Figure 79 shows the little block that supports the match-box, and

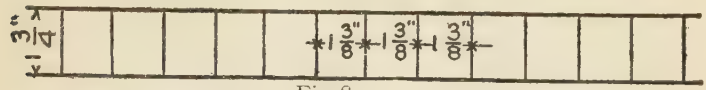


Fig. 80

Fig. 78

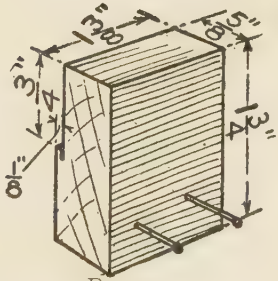


Fig. 79

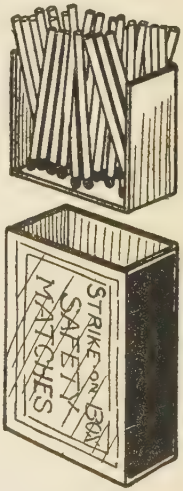


Fig. 81

FIG. 78. A HOLDER FOR SAFETY MATCHES
FIGS. 79-81. DETAILS OF THE MATCH HOLDER

Figure 80 shows how by marking off distances of 1⅜ inches along a piece of 1-by-2 "furring strip" (this will measure ¾ inch thick and 1¾ inches wide), you can saw up the strip into a number of blocks in a jiffy. In cutting the blocks, care must be taken not to split the edges. To prevent this, place the strip upon another strip and saw through the upper

strip into the lower one. When the blocks have been sawed, cut away one-half of the surface on one face to a depth of ⅛ inch, as shown in Figure 79. This is best done with a small saw but a chisel can be used.

Finish the Blocks by drilling holes for nails or screws for fastening to a wall or other surface, then giving them a coat of paint, stain, or shellac.

The Match-box. The sleeve cover of the match-box will slip over the block as shown in Figure 78, and there will be enough clearance between the cover and the surface to which the block is to be fastened, for the cover to slip on and off easily. The upper part of the match-box should be broken away at the height of the sleeve cover (Figs. 78 and 81). Then the match-ends can be reached easily. The upper part of the box can be broken off after the lower part has been slipped into the sleeve.

Chapter IV

THE SAND TABLE

The Sand Box—The Sand Box Supports—Painting the Sand Table—Materials for Model Making—Care of Properties.

This important piece of equipment for the primary department of the Sunday school is not as commonly used as it should be. Often this is because the ready-made table is expensive and no one volunteers to build one. A zinc-lined tray with a table base is unnecessary; on the other hand the box should be better made than some of the carelessly knocked together trays that we find in use. It should be a tight box, but not necessarily water-tight as it is not intended to hold water. With the bottom boards matched and all boards well nailed, and the completed box given two coats of paint, inside and out, there will be no danger of sand sifting through onto the floor. By sprinkling the sand with a sprinkling-can it is easy to regulate the amount of water when the sand is to be made wet. If a metal-lined box is desired by the school, it is not difficult for a boy experienced in soldering to make a galvanized iron liner. Or, one can be ordered at a tinshop for about four dollars. However, I shall show no detail

of a liner, because I believe that few will insist on increasing the cost of the equipment in this manner.

THE SAND BOX

You boys will say that the tray shown in Figure 82 looks like a wagon-box; and so it does, except that

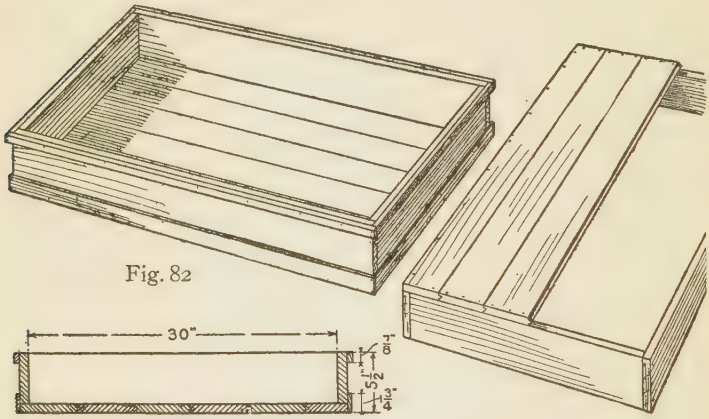


Fig. 82 Fig. 83 Fig. 84

FIG. 82. THE COMPLETED SAND BOX
FIG. 83. CROSS-SECTION OF BOX
FIG. 84. MAKE THE BOX BOTTOM OF TONGUED-AND-GROOVED BOARDS

there is no end-gate. By Figures 83 and 84 you will see that its sides overlap its ends, and that its bottom boards overlap the sides and ends, just like any other box. A base band, consisting of a lattice-strip 1¾ inches wide, conceals the joints between the bottom boards and box ends and sides, and a strip ⅝ inch thick and ⅞ inch wide trims the upper edges.

A good size for the sand tray is 4¾ inches deep inside, 30 inches wide, and 48 inches long. The depth suggested provides for 3 inches of sand, and enough space above it to keep the sand from scattering on the floor.

Material. Make the box of soft pine, cypress or spruce. Do not use hard pine or other hard wood, as it is too heavy. For the bottom buy 6-inch tongued-and-grooved flooring. Buy 2-inch finishing nails for nailing the box together.

Figure 84 shows the box frame with several of the bottom boards nailed in place. Drive the boards close together and nail well.

THE SAND BOX SUPPORTS

The support for the sand box should be no higher than a chair-seat, which is about 18 inches. A regular table can be built on which to keep the box, or legs can be fastened to the corners of the box, but a pair of carpenter's horses are probably the best supports (Fig. 85). The top of the horse is a piece of 2-by-4, the legs are pieces of 1-by-4, the end braces are cut from a 6-inch board. Figure 86 shows the correct spread of the legs, and how the tops are let into the sides of the top piece. Cut away the piece of 2-by-4 as shown in Figure 87. The sides of the cut should be sawed and the wood between the cuts should be split out with a chisel. Fasten the legs with screws. The shape of the end braces can be marked off by placing the board against the legs and marking off where the legs come. Nail them to

the edges of the legs. The bottom of the legs should be trimmed off to make them stand squarely upon the floor. Mark them for trimming by placing a block of wood against them, one side at a time, and drawing a line even with the top of the block.

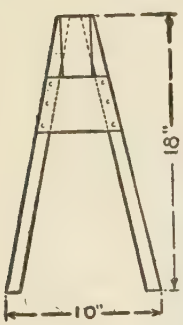


Fig. 86

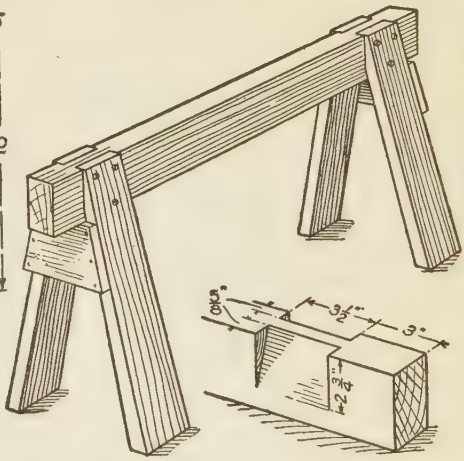


Fig. 85

Fig. 87

FIG. 85. A PAIR OF CARPENTER'S HORSES MAKE GOOD SUPPORTS FOR THE SAND BOX
FIG. 86. DETAIL SHOWING HEIGHT AND SPREAD OF LEGS
FIG. 87. DETAIL OF TOP SHOWING BEVELED CUT FOR LEG

PAINTING THE SAND TABLE

The sand box shown in the photograph of Figure 89 is painted gray, inside and out, with top band painted red. Apply two coats, and between the two applications putty up joints and nail-holes. Paint the saw-horse supports to match the box.

FIG. 88. SOME PROPERTIES FOR SAND TABLE MODELS

MATERIALS FOR MODEL MAKING

Possibly your interest in the sand table will not go beyond the construction of the box and supports, but you would enjoy helping the instructor hunt up her materials for model making, I know. Some of the properties are illustrated in Figure 88.

Sand. In the first place, for filling the box go to a dealer in building materials, or to a building contractor, and purchase the equivalent of four large pails of sand, not the kind known as torpedo sand, but the finer beach sand. As you probably would have to pay for having such a small amount of sand hauled, you can make a couple of trips for it with your express wagon.

Mountains. The base of mountains should be made by heaping up the sand. Stones can be added to produce a rocky effect.

Water. The simplest way of producing realistic water effects is by the use of mirrors, or pieces of broken mirrors. It is not necessary to remove the mirror frame as this can be concealed with sand. Small mirrors can be purchased in the ten-cent stores, and one 7-by-9 inches can be had for twenty-five cents. If you wish to use real water, get a cake-tin with low sides, and set it in the sand, concealing the sides with sand, and the bottom with sand and gravel. In using the pan it is important to break up the regularity of its sides by extending capes and peninsulas out into it. Green or blue tissue-paper may be crushed into the form of waves to represent stormy seas.

Trees. In some parts of the country, you can find branches of trees and shrubbery that make realistic small trees. Tips of pine, spruce and other evergreens are good tree material. Burrs stuck together and mounted on twigs make good tropical trees, and I have stuck them on end, side by side, to represent shrubbery. Here is a good field for experimental work. By keeping your eyes open while on hikes you will see many grasses, weeds and ferns well adapted to miniature tree and shrubbery making, and in the course of a summer you can gather a large stock of material.

Trees and shrubbery can be made of sponges torn apart into the shapes wanted. Another way to make trees is to take sticks an inch or so square, whittle them round, and then shave them off from the center towards the end, leaving the curled shavings to stand out in the manner shown in Figure 89. All artificial trees can be stained with oil-paint thinned with turpentine, or with dyes.

Moss is excellent for grassy slopes, and closely cropped sod may also be used.

Buildings. Sets of small buildings can be obtained in toy stores, but these will not always do for the lesson to be illustrated in the model. More appropriate buildings can often be made of small stones, while match-boxes, pill-boxes, spools, corks, typewriter ribbon boxes and small candy boxes, can be used in the construction of buildings. By coating these containers with glue then sprinkling sand or salt over the coated surfaces, the effect of stone can be produced. Modeling clay and plaster-of-Paris

can also be used to advantage in making structures of the various types of Bible times. Tents may be made of white note-paper.

In making buildings, trees and other parts of the sand table models, use care to make them of proportions as nearly correct as possible.

Figures. It is difficult to find dolls of the right size for Bible story models, and teachers who have used dolls for the purpose are of the opinion that their use is ill-advised because of the problem of dressing them in keeping with tradition. Many prefer the use of matches, short wax tapers or straws. Houses that supply Sunday school requisites furnish sheets of Bible picture cut-outs that are excellent for sand table models permitting the use of figures several inches high. A complete list of Bible-picture subjects can be obtained in these cut-outs. Toy lead soldiers, with guns removed, can be included, and animals from a toy Noah's ark. Patterns for a number of animals are given in Chapter V, "A Noah's Ark." Other small animals can be picked up in a ten-cent store and in toy stores. In the photograph of Figure 89, animal crackers have been used for the model illustrating the story of the Ark.

CARE OF MODEL PROPERTIES

Once you have acquired a large collection of materials for model properties, or started a collection, a suitable method of filing must be found. By no means should everything be dumped into a box after use, for much of it would be unfit for use a second

FIG. 89. A SAND TABLE MODEL ILLUSTRATING THE STORY OF NOAH'S ARK

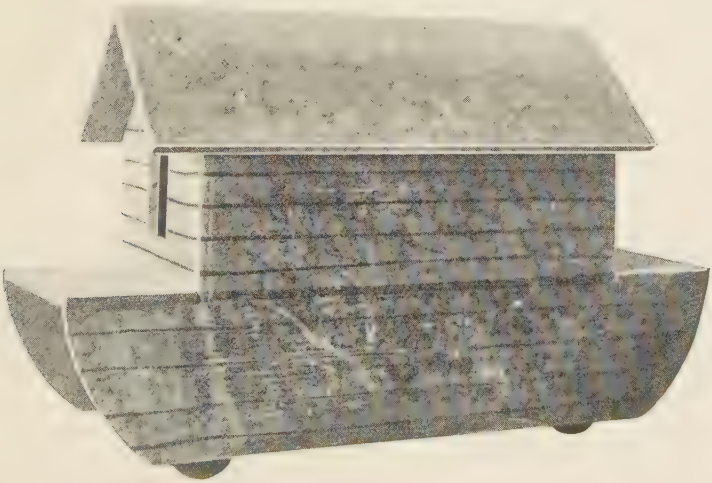


FIG. 90. THIS NOAH'S ARK MODEL IS EASY TO BUILD
(For working details and instructions, see Chapter V)

[*Facing page* 66

time, as a result of rough handling. The best way to keep the materials is to arrange them in a vertical filing cabinet, like that described and illustrated in Chapter IX. Cigar-boxes and starch-boxes can be used for containers, and the shelves of the cabinet spaced the correct distance to accommodate them. This cabinet can be made large enough to hold quarterlies, picture-cards, and various primary supplies, in addition to the sand table properties.

Chapter V

A NOAH'S ARK

Building the Ark—Cutting and Mounting the Birds and Animals.

A Noah's ark and its animals furnish a good set of problems for the Daily Vacation Bible School, the former a problem in laying out, cutting, and assembling parts accurately, the latter in cutting irregular-shaped pieces with a coping-saw. A time-worn toy is this, but it also has its practical use in the primary department, where it may be kept among the properties for sand table work. Figure 89, in the preceding chapter, shows the ark for which working drawings are given in this chapter, in the sand table picture model illustrating "The Story of Noah's Ark," and Figure 90 shows a larger view of the ark.

Figure 91 shows a detail drawing of the completed ark, and Figures 92 to 100 details of its parts. If these details are carefully followed, the resultant model will be more substantial and better looking than most of the store arks.

Material. This ark is built of wood ¼-inch thick, but grocery boxes, even though they may be ⅜-inch wood will serve the purpose just as well as the thinner stuff, so do not go to the expense of having the material planed down.

Do you know the right way to separate the boards

of a box? Do not try to remove a board by hammering directly against it, especially if it is a wide, thin board. It is almost certain to split if you do this. Place a block of wood across the width of the board and direct your hammer blows against it. The force of the blows then will be distributed evenly

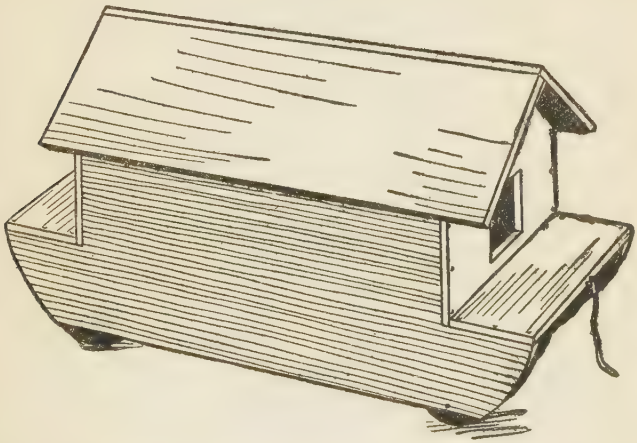


FIG. 91. DETAIL OF NOAH'S ARK SHOWN IN PHOTOGRAPH OF FIGURE 90

over the width of the board, and the board will come off easily. Remove one end of the board, first, then the other. If the board is nailed along its edge, use the block to separate it from the box.

Laying Out and Cutting the Parts. Figure 92 shows a detail of the ark with its roof removed. Figure 93 is a detail of the roof. Figure 94 a cross-section of the ark, and Figures 95 to 99 show patterns for all of the parts required, with dimensions. First, prepare two side walls like A (Fig 95), then

two end walls like B (Fig. 96). One piece can be laid out and cut, then used as a pattern for marking the second piece. If you have a bit and bit-stock or a hand gimlet bore a hole at each of the four corners

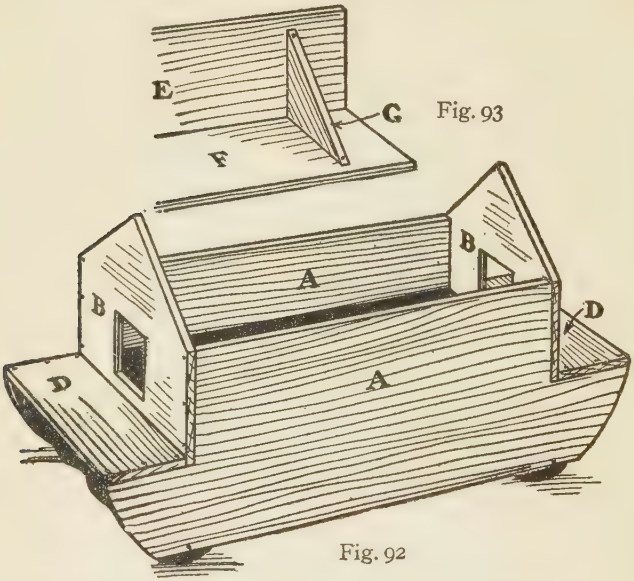


Fig. 93

Fig. 92

FIG. 92. DETAIL OF ARK WITH ROOF REMOVED
FIG. 93. DETAIL OF ROOF

of the doorways in the end walls, and cut from hole to hole with a small saw. If you have no tool for boring, cut the doorways with your knife. By scoring the wood around the openings, on both sides of the board, with your knife, the thin wood will cut through quickly.

Assembling the Parts. Nail end walls B to the

Fig. 98

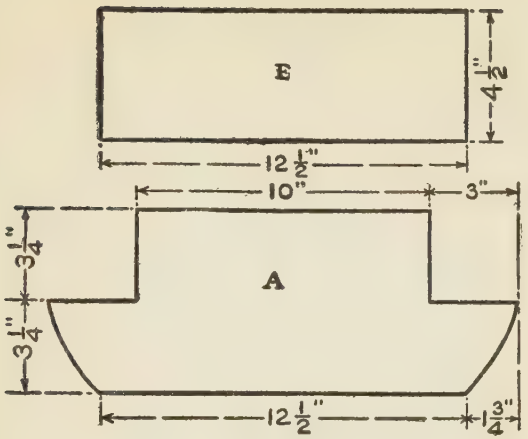


Fig. 95

Fig. 96

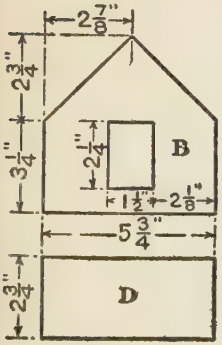


Fig. 97

Fig. 99

Fig. 100

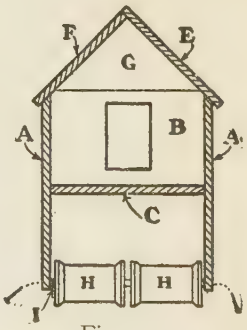


Fig. 94

FIG. 94. CROSS-SECTION OF ARK
FIGS. 95-99. DETAILS OF WALLS, ROOF AND DECK
FIG. 100. DETAIL OF SPOOL WHEELS FOR MODEL

ends of the side walls A. Then cut a board to fit between the four walls for the floor (C, Fig. 94), and fasten it in position with brads. Pieces D (Fig. 97) form the decks fore and aft (Fig. 92).

The Roof. Instead of nailing one side of the roof to the ark, and hinging the other half to it, as the roofs of most toy arks are built, the entire roof is built in one removable section. This is a stronger form of construction. Hinged roofs are easily broken. The roof is made of four pieces (E, F, G, Figs. 93, 94, 98 and 99). Pieces E and F are of the same length (Fig. 98) but F is ¼ inch narrower than E because the latter is lapped over its edge. Pieces G are braces. Cut them of the size shown in Figure 99. Fasten them between boards E and F, 1⅜ inches from the ends, so they will fit between the gables of the end walls when the roof section is placed upon the ark.

Mounting the Toy Ark. The toy ark is mounted upon spool wheels (H, Figs. 94 and 100), so that it can be drawn across the floor like a toy wagon. Get four spools of equal size. Spools 1½ inches in diameter and 2½ inches long are the best size to use. Cut a round stick axle to fit loosely in the spool holes. Cut the axle sticks just long enough to fit between walls A of the ark (I, Fig. 100) and fasten them with brads driven through the walls into their ends (Fig. 94).

Finishing. Probably the original ark was not painted. Our toy should be, though, and I would suggest yellow or green for the walls and red for the roof and the decks.

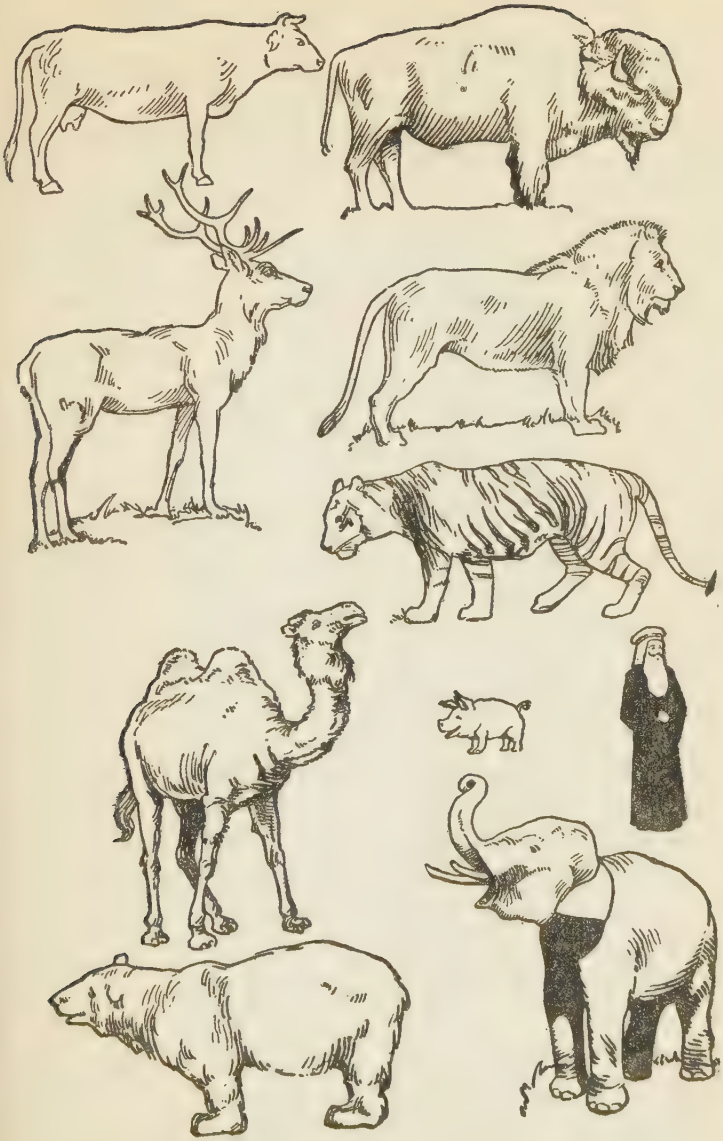


FIG. 101. PATTERNS FOR NOAH AND A FEW ANIMALS FOR THE TOY ARK. (MAKE TRACINGS OF THESE ON THIN PAPER AND THEN TRANSFER THEM TO CARDBOARD.)

Birds and Animals. Full-size patterns for a number of animals for the toy ark are given in Figure 101. Any well illustrated encyclopedia will furnish you with drawings for additional animals and birds. The patterns in Figure 101 can be traced upon thin paper, then the paper can be reversed, and the outlines transferred upon cigar-box wood, or other thin wood or wallboard.

The pattern shown for Noah can be altered for other members of Noah's family.

Working Material. If you use cigar-box wood, prepare the boxes for use by first placing them in a pail or tub of hot water, and allowing them to soak until the paper labels loosen. Peel off the paper, place the box covers against the bottoms, bind them with string to hold them flat, and place the boxes in a warm place to dry. When the wood is dry, separate the boxes. Other woods suited to coping-saw work are holly, basswood, and whitewood. Wallboard cuts as easily as wood, and is nice material to work with because it does not split. Rough edges can be sandpapered smooth just the same as rough edges of wood.

Cutting. It is not necessary to cut out the figures along the drawing outlines. They will be stronger, in fact, if you do not, as you will see by looking at one of the finished animal cut-outs shown in Figure 102.

Use a coping-saw for cutting. This small saw can be worked around curves and along short straight cuts where no other saw could be used. This style of saw is shown in use, in the sketch of

Figure 8, in Chapter I, which also shows a good form of box bench to saw on.

Mounting. When you have cut out the figures, make mounts for them of narrow strips of wood,

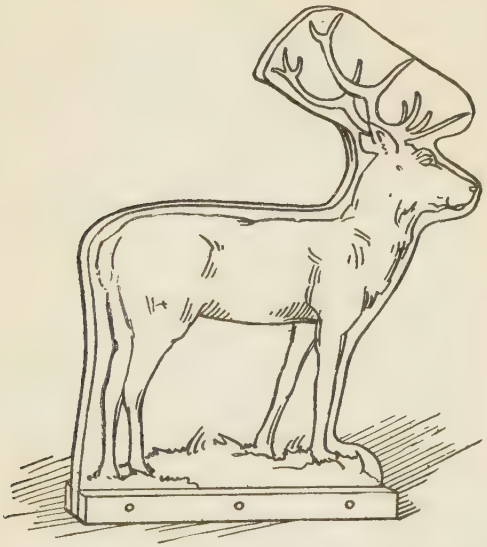


FIG. 102. MOUNT THE ANIMALS BETWEEN WOODEN BLOCKS, LIKE THIS

fastening the strips to opposite sides of the bases with brads, as shown in Figure 102.

Coloring. If you wish to you can color the animals with crayons or watercolors.

Chapter VI

MAKING A MODEL OF YOUR CHURCH BUILDING

A Model of the New Building—The Model as a Bank for the Building Fund—A Model of the Old Building—A Cardboard Model—A Wooden Model—A Clay or Plaster Model.

Because it is difficult for some people to visualize the finished building from drawings, many architects make or have made models of proposed residences, churches, schools, and other buildings, with every detail in correct proportion. A number of firms make a specialty of this work, and some of the models shown in architectural exhibits are truly wonderful. Some of these models are made of wallboard, some of cardboard, some of wood, some are modeled in clay and cast in plaster-of-Paris. Then the texture of the building materials is worked out with paints, with pen-and-ink, with plaster, with glue and sand and in other ways. After the model has been completed it is usually mounted upon a base of the right size to represent the building lot, and a scheme for landscape gardening is laid out, all to scale.

Architectural models of buildings are expensive to have made, for they represent more work than

one would suppose. But the work is not difficult, and can be done by any lad with plenty of patience and a good sense of proportion—best of all, if a boy has had mechanical drawing at school and can read an architect's blueprints. He can generally obtain a set of blueprints of any new building of which he wishes to make a model, and make a model that will be exactly correct in every detail.

A MODEL OF THE NEW BUILDING

If your church is about to erect a new building, and you are interested in building, and have an idea that sometime you may take up the study of architecture, or if you just naturally like to construct things, suppose that you try your hand at making a model from a set of the architect's plans. The model of the new church building will be appreciated, especially by the building committee whose mission it is to raise funds and erect a structure that will please the majority of the church members.

THE MODEL AS A BANK FOR THE BUILDING FUND

One successful plan that has been tried is that of making a slot in the roof of the church model and converting it into a bank for contributions to the building fund. After the model has served its purpose as a booster for the new building, a shelf can be erected for it in the Sunday school room or it can be continued in service as a contribution box.

A MODEL OF THE OLD BUILDING

A model of the old building would be appreciated, also, by the old-timers who had a hand in its erection, so you or some one else in your class might make such a model before the wreckers raze the building to make way for a new building. The old and new models, placed side by side, will show the growth of the church.

A CARDBOARD MODEL

It is easiest to make a scale model of a building of cardboard. Matboard, such as is sold for photograph mounts, is good. This can be obtained in various colors, and often you can find a shade that will match that of the material of which the building is to be constructed. Wallboard is also excellent for the work.

The Walls. If you have had a course in mechanical drawing, it will be an easy matter to lay out the four elevations of the building to scale, upon four pieces of cardboard. Use a sharp knife for cutting matboard. Score along all outlines of each elevation, by cutting deeply into the cardboard, then cut the rest of the thickness, or bend over the cardboard so that it will break along the scored lines. The door and window openings can be cut out, but generally these are left intact. It makes an interesting model to cut out the window panes, cover the openings with transparent paper, and then place a small electric light inside, to give the effect of an electric-

lighted interior. Use a sharp knife or saw for cutting wallboard.

Assembling. When the four walls have been cut, fasten them together at the corners with strips of gummed paper. Then mount the model upon a board base before proceeding with its construction.

Bays, Porches, Steps and Balustrades can be added now, or left until after the building has been roofed.

The Roof. The pitch of this can be obtained from the blueprint elevations. Be careful to cut the roofing pieces of the right sizes so they will have the correct projections.

Shingles, Slate and Tile coverings of the roof can be indicated with paint, but a better way, and one used by achitectural model builders, is to cover the roofing cardboard with a thin coating of plasticine (a non-drying modeling compound), and then mark off shingles, slate or tile with the point of a nail.

Brickwork. As plasticine can be obtained in various colors, you can match building materials with it. Terra cotta shades of it plastered thinly upon the walls, with joints struck in black or white, make effective brickwork, when well done.

Stucco can be imitated by spattering the walls with paint of the desired color.

Painting. Paint all stone courses and woodwork. Indicate indefinitely shades upon the windows, and blacken the glass below the shades.

Stained Glass Windows can be painted with water-colors; or, if you can find a suitable colored post-card, or Sunday school card, of the right size, bear-

ing just such a picture as would be used in a church window, you can set it in the opening.

FIG. 105. IF YOU CANNOT OBTAIN BLUEPRINTS TO WORK FROM, MAKE A SKETCH OF EACH ELEVATION OF THE BUILDING, LIKE THIS

If you wish to make a model of a church building of which no plans are available, make a sketch of each elevation similar to that shown in Fig. 105.

FIG. 103. A WOODEN MODEL OF A CHURCH BUILDING MADE BY EARL HEMMERLY

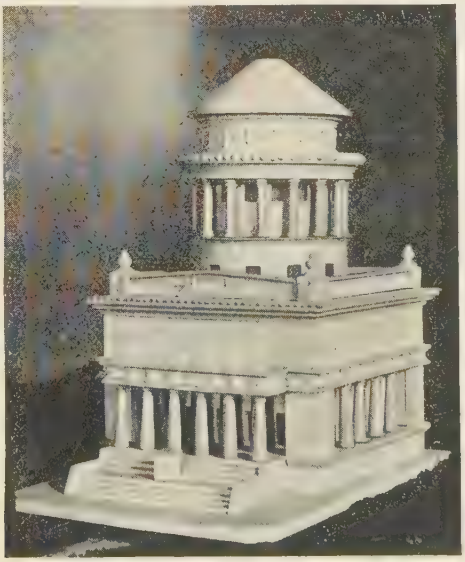


FIG. 104. ANOTHER MODEL BUILT BY THE SAME LAD

[*Facing page* 80

You can get all horizontal measurements accurately with a rule or tape, and you can approximate heights in the same way that you would measure the height of a tree.

A WOODEN MODEL

This is more difficult to make to scale than a cardboard or wallboard model, because the walls must be built up of many pieces. But if you are experienced in woodworking you may prefer wood to other material.

The photographs of Figures 103 and 104 show interesting models built a number of years ago by one of my readers, Earl Hemmerly, of Allentown, Pennsylvania. Earl began making models before he was old enough to go to school, his first model being a Noah's ark. He built the church model in Figure 103—a model of his own church—while he was still in grammar school, the model in Figure 104, a year later.

The Foundation. You must first of all provide a base on which to build the wooden model. Make this of several boards battened together with strips nailed across their ends.

The Building. Upon the base, build the main portion of the structure, then add to it whatever wings and towers there may be, then construct the roof and steeples, then add the moldings and various ornamentations.

Doorways and Window Openings can be cut through the walls, or they may be indicated with

paint, which is easier. Strips of cigar-box wood nailed around painted openings will make them look real. A small saw and a jack-knife will take care of all cutting.

A Real Stained Glass Window is set in the model shown in Figure 103, and this is the way Earl Hemmerly made it. First, he prepared a negative from a picture post-card, then from the negative he made a positive, which he colored to match the post-card, and this he set in an opening cut in the wall. With a lighted electric-lamp placed inside the model, light coming through the stained glass window produces a realistic effect.

In building the other model (Fig. 104), Earl made use of various pick-up materials, among which were the following:

Columns. Broom-handles and dowel-sticks.

Dome. A tin funnel with the spout removed.

Cornices and Belt Courses. Wooden picture-moldings with tacks driven into them for ornamentation.

Painting. When the wooden model has been completed, paint it with two coats of paint.

A CLAY OR PLASTER MODEL

Making a clay model of a building, then casting it in plaster-of-Paris, is a problem in which you may not be successful, especially in the latter operations of making the plaster molds and the plaster casts. But if you have modeling clay, you will find it inter-

esting to make a small model of the church. It need not be cast in plaster, for it will dry hard, and in this form it will last a long time. Try your hand at making such a model when you have the opportunity.

Chapter VII

FOR THE CHURCH GROUNDS

A Plant Box—A Hanging Plant Box—A Pedestal Box—A Trellis —A Red-Cross Wren House—Another Wren House—A Bluebird House—A Woodpecker House—A Concrete Bird Bath—A Pedestal Bird Bath.

We make plant boxes, trellises, bird houses and bird baths for home, and our school boards give more attention each year to beautifying the school grounds. Are there not possibilities of adding to the beauty of our churches and lawns? I believe that you might contribute your share to the general improvement by making garden accessories.

A PLANT BOX

A well designed, carefully made plant box, suitably planted, and regularly tended gives a charm to any window-sill or balustrade.

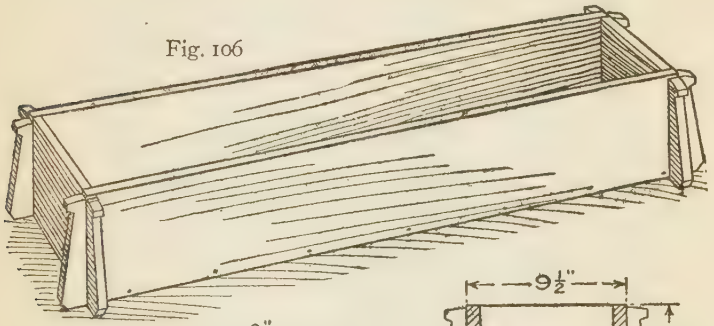
The depth of a box need not be more than 6 inches, and should not be more than 7 inches, because of the amount of earth required for filling. The width and length will be determined by the position the box is to occupy.

The box shown in Figure 106 is made like any box except that its bottom is set between the sides and ends instead of being nailed to the edges of the side

and end boards (Fig. 107). When the parts have been assembled, cut eight brackets by the pattern of Figure 108, and nail a pair of them to each corner as shown in Figure 106.

A Liner is unnecessary for an outdoor box, unless the box is placed where leaking water might stain

Fig. 106



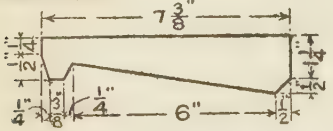


Fig. 108

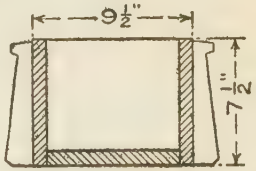


Fig. 107

FIG. 106. A PLANT BOX FOR WINDOW OR BALUSTRADE
FIG. 107. CROSS-SECTION OF BOX
FIG. 108. PATTERN FOR CORNER BRACKET

the building. In that case, it is best to take the box to a tinshop and have a liner made of galvanized iron, or, if you know how to solder, you can do the work yourself. The upper edges of the liner should be bent out to form a rim that will lap onto the edges of the sides and ends of the box.

When a liner is used, care must be taken not to give the plants too much water, unless a pet-cock is

soldered to the bottom of the liner through which to draw off surplus water; because standing water in a tight box will sour and harm the plant roots.

Drainage. Some florists bore holes for drainage in wooden boxes, making them about ¾ inch in diameter, and providing one for every 8 square inches

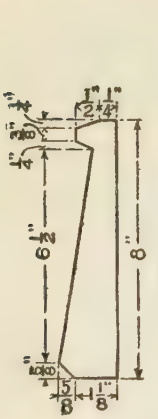


Fig. 110

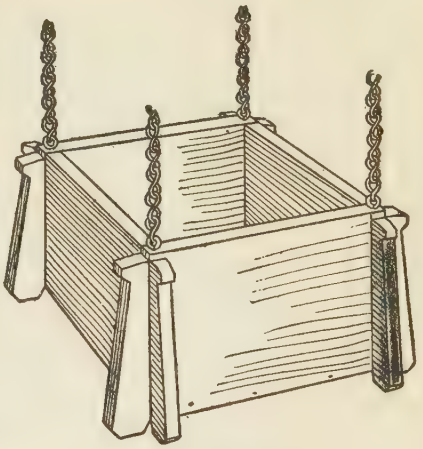


Fig. 109

FIG. 109. A HANGING PLANT BOX
FIG. 110. PATTERN FOR CORNER BRACKET

of bottom area. Others contend that they are unnecessary as the box will take care of surplus water.

Finishing. Plant boxes may be stained or painted. Wood stain may be purchased in various colors. Creosote shingle stain is good for the purpose. You can make up a stain of oil-paint thinned with turpentine and boiled linseed-oil. If you paint the boxes, apply two coats. White, green and brown are the colors generally used for plant boxes.

A HANGING PLANT BOX

The square hanging box shown in Figure 109 is made in the same way as the long box, but the corner brackets are a trifle larger. Figure 110 is a pattern for the brackets.

Screw four long screw-eyes into the top edges of the box, at the corners, and attach lengths of jack-chain to them for hangers.

A PEDESTAL BOX

Omitting the chain hangers, the hanging box becomes an attractive pedestal box, the projecting corner brackets forming feet for it to stand on.

A TRELLIS

The fan-shaped trellis in Figure 111 may have as many fingers as you wish. The fingers are all part of one piece of board, separated by three dowel-sticks. Figure 112 gives dimensions for the board required for a four-finger trellis of the size shown, also the location for holes for the dowel-stick separators. Use dowel-sticks $\frac{3}{16}$ inch in diameter for separators. Bore the holes through the piece, edgewise, before ripping the fingers apart. With the fingers separated slip separators A, B and C through the holes (Fig. 113). Pull the fingers apart, two at a time, and nail them to separator A, first, with a distance of 2 inches separating them (Fig. 114), then nail them to separator B leaving $4\frac{1}{2}$ inches be-

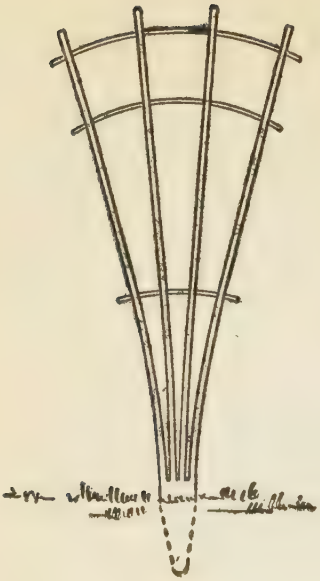


Fig. 111

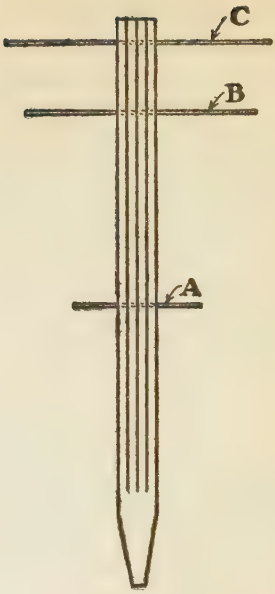


Fig. 113

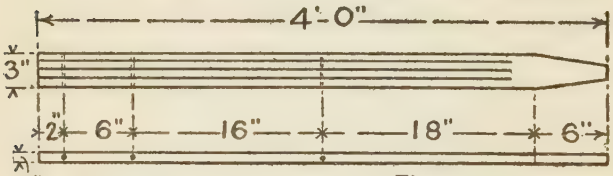


Fig. 112

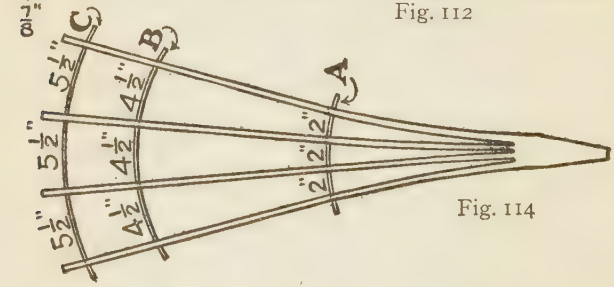


Fig. 114

FIG. 111. A FAN-SHAPED TRELLIS
FIG. 112. CUT A STRIP OF WOOD LIKE THIS
FIG. 113. RUN DOWEL-STICKS THROUGH THE STRIP LIKE THIS
FIG. 114. THEN SPREAD THE FINGERS AND FASTEN THEM TO THE DOWELS

tween the fingers, then to separator C leaving 5½ inches between. With careful bending and nailing, you will find the work of assembling easy.

Finishing. Either stain or paint the trellis.

A RED-CROSS WREN HOUSE

Birds are Nature's provision for the destruction of insects, for maintaining the balance between insects hatched and insects destroyed. But by permitting the slaughter of certain species of insectivorous birds, we have disturbed this balance and have brought about, as a consequence, an annual loss in plant life. We cannot bring the birds back in numbers but we can make their nesting places safer so that a greater percentage of their young may survive. What better place is there to start our missionary work for the birds than the church lawn? Let us erect at least one house there, a hanging house or one supported on a pole.

A Cross lends itself nicely as a design for a birdhouse, because the center and each of the four extensions, separated by partitions, form compartments of equal size (Fig. 115). We must not expect that each compartment will be occupied, for wrens are not chummy birds, and a city lot is not large enough for more than one family at a time. But the wren raises two broods a season, sometimes three, and we might give her the choice of five compartments.

Cutting the Parts. Figures 116 to 120 show patterns for the parts. Eighteen pieces are required

for the cross, and dimensions for cutting are given on the diagrams. It is best to prepare all parts before beginning to assemble. The dimensions have been worked out for wood ⅜-inch thick. If your

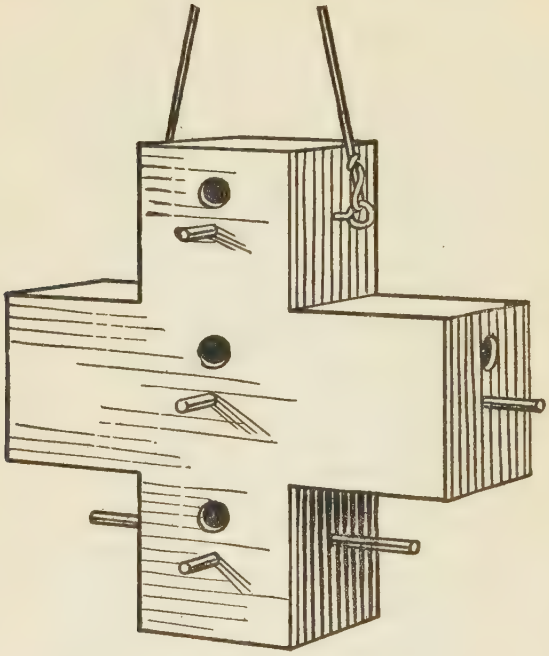


FIG. 115. A RED-CROSS WREN HOUSE

material is of different thickness, you will have to alter the dimensions of the pieces which overlap edges of other pieces, to allow for the difference. Care must be used in marking out the pieces, and when sawing you must cut a trifle outside the lines to allow for smoothing up the edges with a plane.

Careful preparation will simplify the work of assembling.

Doorways. There will be less danger of splitting the wood, if you will bore the doorways before cut-

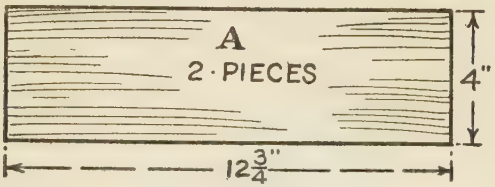


Fig. 116

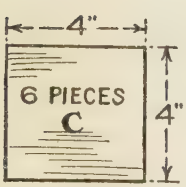


Fig. 118

Fig. 117

Fig. 120

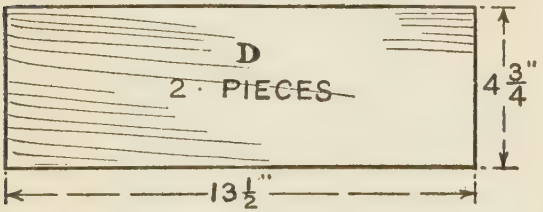


Fig. 119

FIGS. 116-120. PATTERNS FOR PARTS OF THE RED-CROSS WREN HOUSE

ting the pieces. Doorways for wrens should be ⅞-inch in diameter. This is plenty big enough, and it is best not to make larger openings because they will permit sparrows to enter. Bore a ¼-inch hole

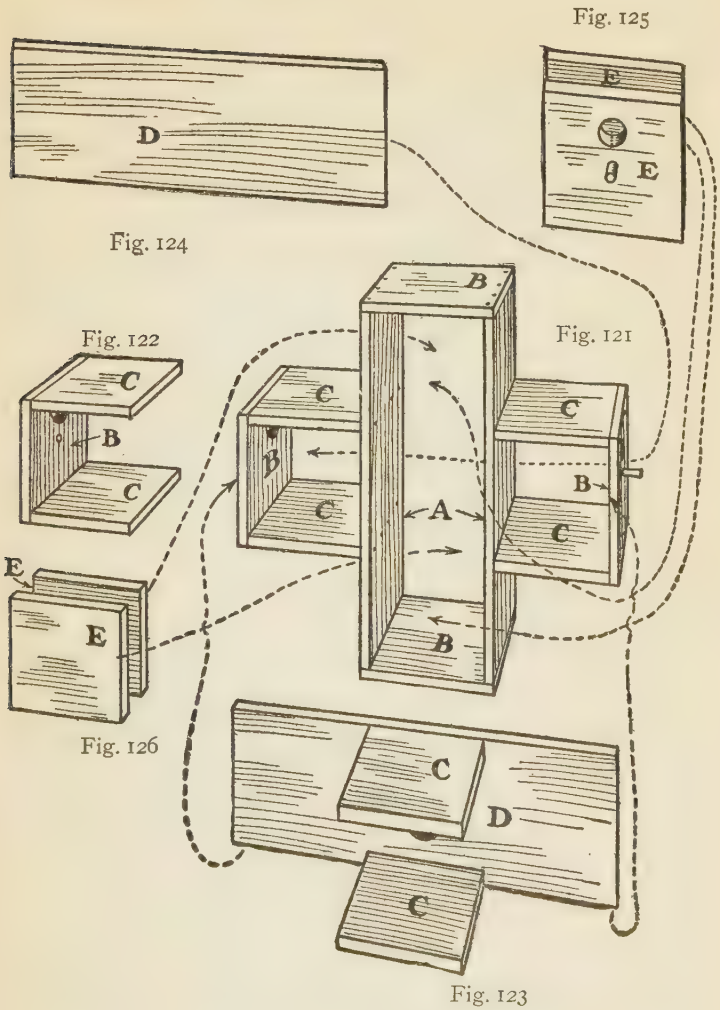
through the center of each piece that is to have a doorway, in which to fasten a perch-stick, then locate the center of the doorway 1 inch above the center of the perch-stick hole.

Assembling the Parts. Use 1-inch finishing-nails for nailing together the parts. In placing and driving the nails, bear two things in mind—to place them far enough from the corners to avoid splitting the edges, and to drive the nails straight so they will not break through the side surfaces of the blocks.

Assemble the two side extensions of the cross, first, as shown in Figure 122. Then nail vertical pieces A to them and nail a pair of the blocks B to the ends of pieces A. This will give you the framework shown in Figure 121. Be careful to locate the side extensions of the cross in the exact center of the length of pieces A; also, to get all corners square.

The back of the house is enclosed by one of the long pieces D (Fig. 124), and two of the short pieces E (Fig. 126). Their positions are indicated in Figure 121. The two remaining blocks E (Fig. 125) enclose the front of the top and bottom compartments (Fig. 121). The remaining long piece D encloses the front of the center and side extension compartments (Fig. 123). To this piece are attached two of the blocks C, to partition off the top and bottom compartments from the center one. Screw this piece in place so that you can remove it easily in the Spring to clear out the old nests.

Finishing. As a wood preservative, give the inside of the compartments a coat of paint. Paint the outside of the cross with two coats of red paint.



FIGS. 121-126. DIAGRAMS SHOWING ASSEMBLING OF WREN HOUSE

After the first coat has dried, putty all joints and nail-holes.

Hangers. Drive a screw-eye into each side of the top compartment, and attach wire hangers. You may hang the wren house from a branch or strap it to a tree trunk.

ANOTHER WREN HOUSE

The wren house illustrated in Figure 127 may be hung or supported upon a post.

The Parts. Figure 128 shows a cross-section of the wren house, with the parts lettered the same as the patterns of Figures 131 to 134. Cut end pieces A first. Opposite edges must be symmetrical. The most accurate way of laying them out is to draw a center-line as shown, then lay out one-half of the pattern to the left of the center-line, trace the outline upon a piece of thin paper, turn the paper over, and trace off the outline to the right of the center-line. When you have marked out the end correctly, tack it with small nails to the board out of which the other end is to be cut, and cut the two pieces at one time. Saw carefully, close to the outline. Smooth up the edges with a plane and sandpaper. If you haven't a bit with which to bore the doorway, cut the hole with your jack-knife.

Assembling. Floor board C (Fig. 128) fits between the end pieces; sides B fit between the ends, and their top and bottom edges are beveled to fit against the floor and roof boards. Nail one side board in place, and fasten the other with buttons so

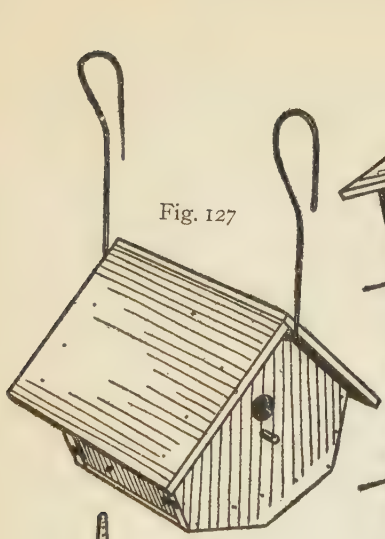


Fig. 127

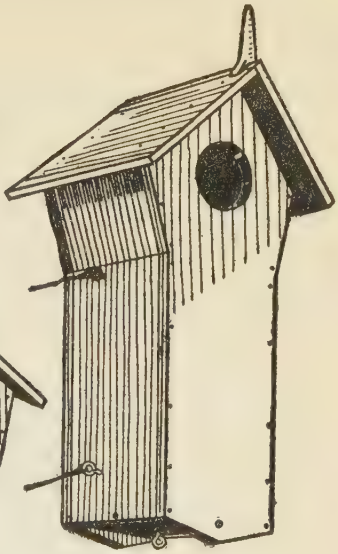


Fig. 130

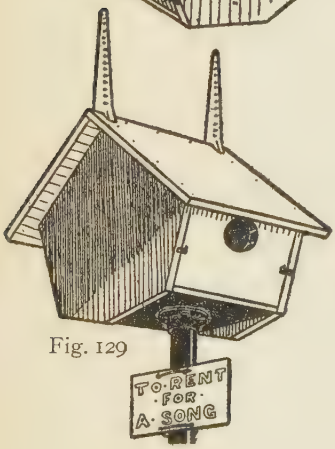


Fig. 129

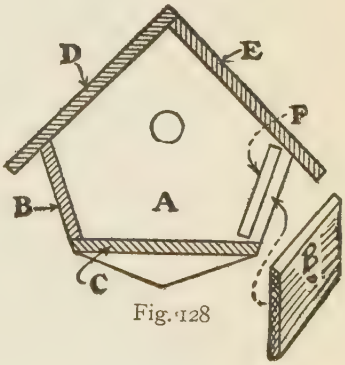


Fig. 128

FIG. 127. ANOTHER WREN HOUSE
FIG. 128. CROSS-SECTION OF THE WREN HOUSE
FIG. 129. A BLUEBIRD HOUSE
FIG. 130. A WOODPECKER HOUSE

it can be removed for cleaning the house. Make the buttons out of tin cut from a can (Fig. 135), and pivot to the edges of the end pieces with brads, as shown in Figure 127. To keep the side from pushing in too far, tack a pair of stop strips to the inner face of end pieces A (F, Fig. 128). Roof boards D and E are of equal length (Fig. 134), but board E is narrower to allow for the lapping of board D.

Hanger. A wire hanger can be run through holes bored through the gables of the house (Fig. 127).

A BLUEBIRD HOUSE

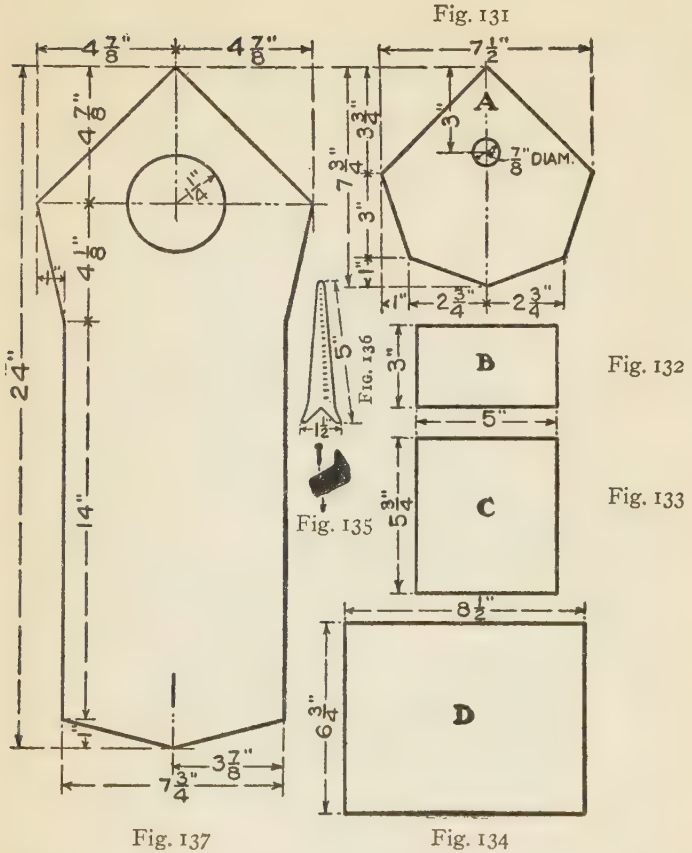
The bluebird house shown in Figure 129 is built like the wren house in Figure 127, but its entrance is 1½ inches in diameter. You can locate the entrance either in one side, as shown, or in one end.

Spires for the roof may be whittled out of sticks (Fig. 136), or handles of old paint brushes may be used.

A Pipe Support. Bluebird houses should be supported on fixed brackets or posts, so they will not swing. Figure 129 shows a support made of iron pipe with a floor flange on the upper end that is screwed to the bottom of the house. If you can get sand, cement and stone, set the pipe in concrete. Bluebird houses should be placed between 6 and 10 feet above the ground.

A WOODPECKER HOUSE

A woodpecker house must correspond as nearly as possible to the favorite hollow-tree-trunk nesting



FIGS. 131-134. PATTERNS FOR PARTS OF WREN AND BLUEBIRD HOUSES
FIG. 135. CATCH FOR REMOVABLE SIDE OF HOUSES
FIG. 136. SPIRE FOR BLUEBIRD HOUSE
FIG. 137. PATTERN FOR FRONT AND BACK OF WOODPECKER HOUSE

place of the woodpecker family; therefore it must be a long house. Its floor must be 16 inches below the doorway, and the diameter of the opening must be 2½ inches.

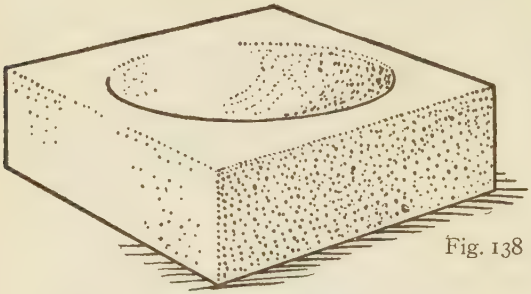


Fig. 138

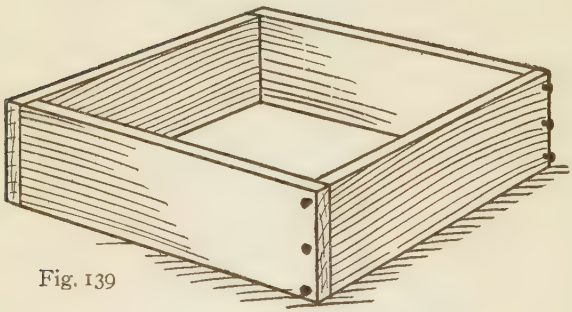


Fig. 139

FIG. 138. A CONCRETE BIRD BATH
FIG. 139. FORM FOR CASTING BIRD BATH

The Parts. Figure 137 shows a pattern for the front and back walls. Make the side walls 7 inches wide. I am going to let you work out the sizes for the other pieces. The floor should be fitted between the walls, and be held with screws so it can be removed for Spring house-cleaning.

A CONCRETE BIRD BATH

Making things of concrete is not as difficult as you may think, and the work is lots of fun. The bird

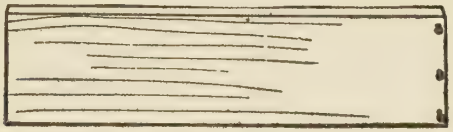


Fig. 140

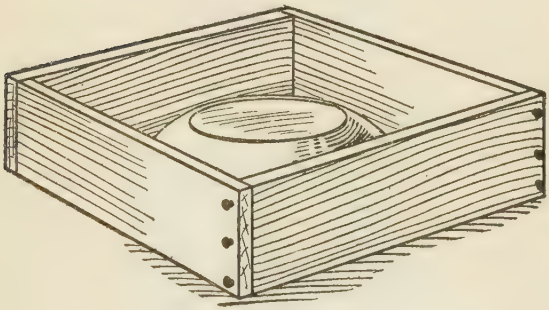


Fig. 141

Fig. 142

FIG. 140. SIDE OF FORM
FIG. 141. FORM WITH TIN BASIN IN POSITION FOR CASTING BATH
FIG. 142. CROSS-SECTION OF FORM WITH CONCRETE POURED

bath in Figure 138 is one of the simplest pieces that you can cast. This bath is designed to be set into the ground. Wouldn't one look well on the church lawn? You can purchase cement, sand and stone at

almost any lumber yard; and when only a small quantity is desired it is often possible to obtain it from a building contractor in the neighborhood. Boards are needed for forms to cast the concrete in and usually you can pick up what is needed close at hand. Old boards will do, provided one face is good enough to present a good casting surface. Box boards, except end pieces, are not thick enough for the purpose.

The Form for casting the bath is shown in Figure 139. By lapping the ends of the boards in the manner shown, you can cut the four pieces of equal length. The nails will be driven through only one end of each board (Figs. 139 and 140).

The basin of the bath is formed over a wash-basin (Fig. 141). As the basin will not be injured, one can be borrowed for the work. If you use a basin that measures 12 inches across, 14 inches will be large enough for the inside of the form.

The Mixture. The correct mixture for the concrete is 1 part of cement to 3 parts of sand, to 5 parts of stone. Mix the sand and cement together, first, then add the stone and mix it thoroughly, after which, add enough water to make a fairly sloppy mixture.

Casting. Spread a newspaper upon a cement surface, throw sand in the center, and invert the basin over the sand. The sand should fill the basin to keep it from denting under the weight of the concrete. Center the form over the basin (Fig. 141). Then shovel the concrete into the form and tamp it down around the basin. Slip a knife around the edges of

the form to let the thin cement grout run down and coat the sides of the casting. Smooth off the concrete even with the top of the form, and allow it to set for a couple of days before disturbing.

Be careful not to break the green concrete, in removing the form boards. If there are any holes in the casting, mix enough sand and cement with water to point up the surface.

A PEDESTAL BIRD BATH

The pedestal bath shown in Figure 143 will give birds protection from cats, and it is more ornamental for the lawn than the bath just described.

The pedestal is quite as simple to cast as the basin. There must be a concrete footing 30 to 36 inches deep to support the base. On top of the base the pedestal is cast, and on the pedestal the basin. Figure 144 shows a cross-section of the basin, pedestal and base.

The Footing requires no form. Dig a hole with a post-hole auger, if you can borrow one. Fill it with concrete to within 2 inches of the surface. Drive a piece of pipe or iron rod into the concrete for a tie-rod.

The Base must have a form of the shape shown in Figure 145. Cast it in place over the footing, if you can; if not, cast a hole in the bottom of the block to receive the footing tie-rod. Drive a short piece of pipe or rod into the block to tie the base and pedestal together.

The Pedestal Form is a square box built as shown

in Figure 146. Notice that the sides are made of boards of equal width, with one edge of each board overlapping the edge of one adjacent board. You will see by Figure 143 that there is a square chamfer in each corner of the pedestal. These are pro-

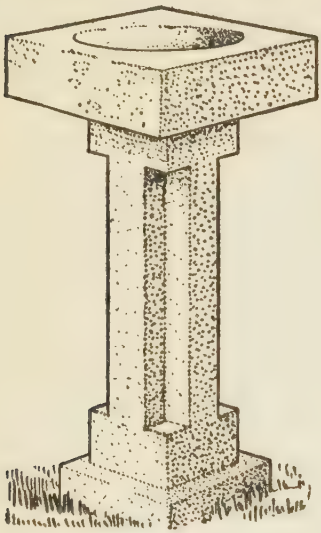


Fig. 143

Fig. 144

FIG. 143. A PEDESTAL BIRD RATH
FIG. 144. CROSS-SECTION OF BIRD BATH PEDESTAL AND FOOTING

vided for in the form by fastening pieces 2 inches square in the corners, as shown in Figures 146 and 147. One side of the box is shown broken away so the position of the corner posts may be seen. It is best to drive the nails that hold the sides of the form only part way in, so the nail heads can be gripped with the hammer for withdrawing, after

the casting has set. This will save prying the boards apart, which is hard to do without damaging the concrete surfaces.

Casting. Unless great care is taken in pouring the concrete in the form for the pedestal, the sur-

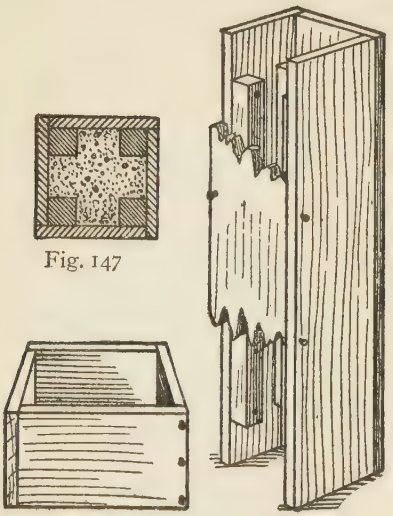


Fig. 147

Fig. 145

Fig. 146

FIG. 145. FORM FOR BASE
FIG. 146. FORM FOR PEDESTAL
FIG. 147. CROSS-SECTION OF FORM AND POST

faces will be full of holes, the stone of the mixture will be exposed, and the edges will not be sharply defined. The grout should be allowed to run down the sides of the form to fill all interstices. This is best done by pouring a small quantity of the mixture at a time, and working this down around the edges and tamping it.

The Basin is cast in the same size form as that used for the bird bath shown in Figure 138. In the center of the bottom of the block, a piece of iron pipe should be cast, by which to anchor the basin to the pedestal. Set the basin in place upon the pedestal as soon as you have poured the concrete in the pedestal form and tamped it.

Chapter VIII

BOOK TROUGHS, ENDS, RACKS AND CASES

A Book-Trough—Book-Ends—A Wall-Rack—A Rack for Dodgers, Programs or Mail—A Magazine-Rack—A Thomas Bailey Aldrich Bookrack—Another Form of Bookrack—A Bookcase with a Curtained Front.

The requirements of Sunday schools for the care of books are varied, so an assortment of designs is presented in this chapter. The small troughs, ends and racks are intended for table use, the bookracks and bookcases for the school library. Other designs will be found in "Home Handicraft for Boys."

A BOOK-TROUGH

A book-trough like that shown in Figure 148 can be of any length you wish to make it, but 10 inches between ends will accommodate half a dozen books, and is the usual length of a small trough.

Figure 149 shows an end view of the rack, with the ends marked C, and the rack members marked A and B. Figures 150 and 151 are patterns of parts A and B, and Figure 152 of end C. Dotted lines in Figure 149 indicate how A overlaps the edge of B; also, the position of the two in relation to end pieces

C. Nail the parts together with finishing-nails 1¼ inches long.

A Decorative Design on the trough ends, like that shown in Figure 152, may be punched into the wood

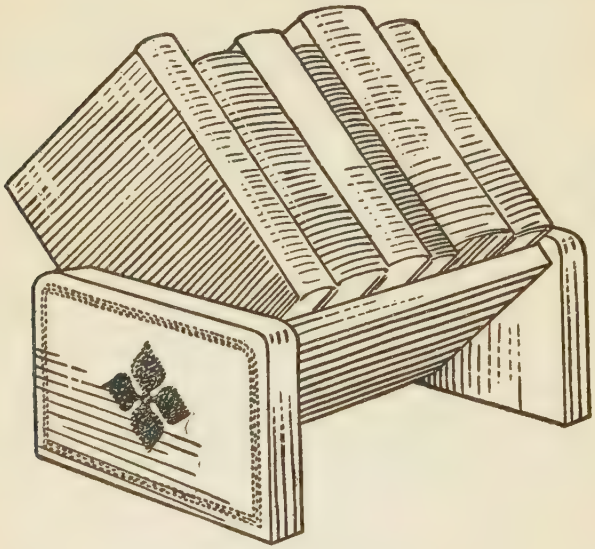


FIG. 148. A BOOK-TROUGH

with the point of a nail or a nail-set, after you have laid it out carefully with a pencil and ruler. You will find it easy to apply the given design.

Enameling. There are a number of ways to finish the wood of the trough. One good way is to use bright enamel. Enamel paint can be purchased at the paint store in 2-oz. cans, which is a sufficient quantity. An attractive combination of colors for the trough is blue with the pattern done in red.

BOOK-ENDS

The book-ends shown in Figure 153 are made of

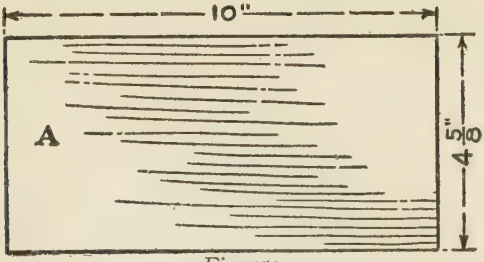


Fig. 150

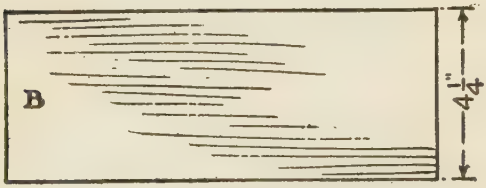


Fig. 151

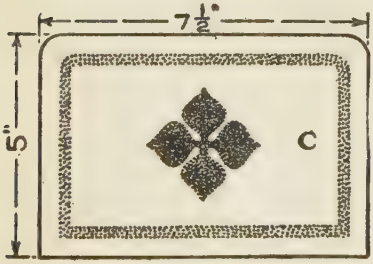


Fig. 152

Fig. 149

FIG. 149. ASSEMBLE THE PARTS IN THIS WAY
FIGS. 150 and 151. PATTERNS OF RACK STRIPS
FIG. 152. PATTERN OF END BLOCKS

galvanized iron. A pattern for cutting the pieces is shown in Figure 154. If you have a pair of tin-

snips, you can cut them yourself; if not, make a cardboard pattern, take it to a tinsmith, and ask him to cut pieces like it. When the pieces are cut, bend them where indicated. The bends must be at right angles. Test them with a square. Smooth the edges with a file.

Finishing. To finish the book-ends, first describe a circle 3½ inches in diameter upon the outside face, and lay out a conventional design within the circle similar to that shown in Figure 156. Use enamel paint in several colors for decorating. A good combination is dark blue for the body of the book-ends, black for the design background, and yellow and red for the flower petals. To keep the metal bases from

FIG. 153. A PAIR OF BOOK-ENDS

scratching the surfaces they are placed upon, cover them with felt or broadcloth, gluing this to the metal.

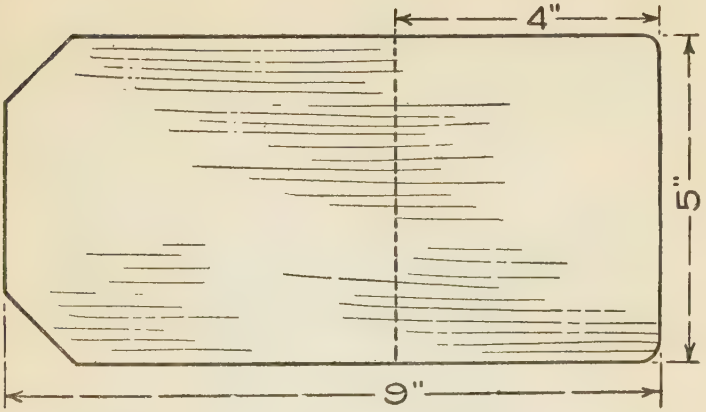


Fig. 154

Fig. 156

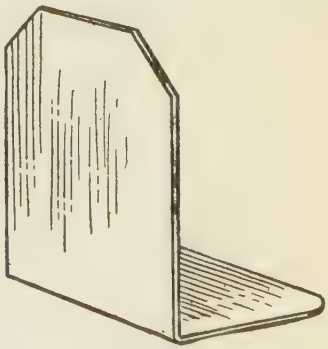


Fig. 155

FIG. 154. PATTERN FOR CUTTING THE METAL BOOK-ENDS
FIG. 155. BEND THEM LIKE THIS
FIG. 156. A SUGGESTION FOR DECORATION

A WALL-RACK

The rack shown in Figure 157 is not as elaborate to make as you might imagine. The back is constructed of 1-by-2 strips, and consists of a pair of

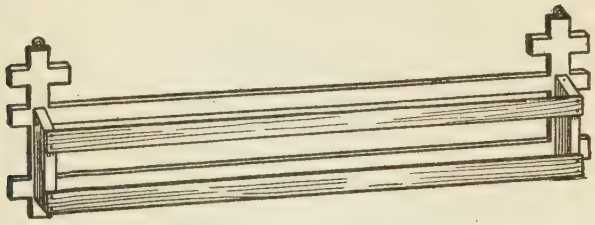


FIG. 157. A WALL-RACK

uprights (A, Fig. 158), two horizontal connecting bars (B, Fig. 159), and a short crosspiece (C, Fig. 160). As you will see by the diagrams these strips

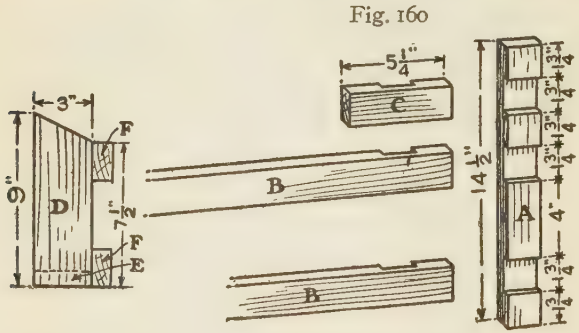


Fig. 161 Fig. 159 Fig. 158

FIGS. 158-161. DETAILS OF PARTS OF WALL-RACK

are notched so they will interlock with their surfaces flush.

The rack is made of two end pieces of the size of

D (Fig. 161), a bottom strip of the width of the end pieces and of the correct length to fit between them (E, Fig. 161), and two face strips (F).

After assembling the rack, and applying stain or paint, drive screw-eyes into uprights A for hanger chains or wall hooks.

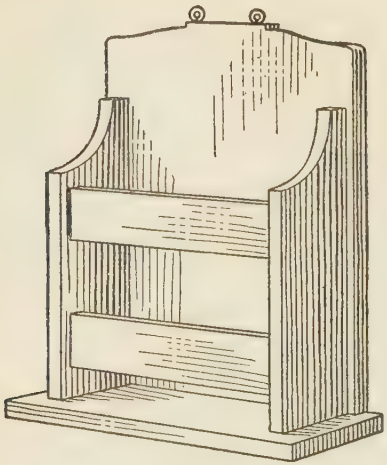


FIG. 162. A RACK FOR DODGERS, PROGRAMS, OR MAIL

A RACK FOR DODGERS, PROGRAMS, OR MAIL

Though this isn't for books, it is probably best included with the bookracks. It is a good holder for dodgers of all kinds advertising church activities, programs and pamphlets for distribution, and for mail. Several of these racks might be used advantageously in various departments of the church.

The completed rack is shown in Fig. 162. Patterns for the back (A), sides (B), bottom (C), and front

strips (D) are given in Figures 163 to 166. Wood $\frac{3}{8}$-inch thick is best for a rack of this size. Box boards will do. There is not much work to cutting

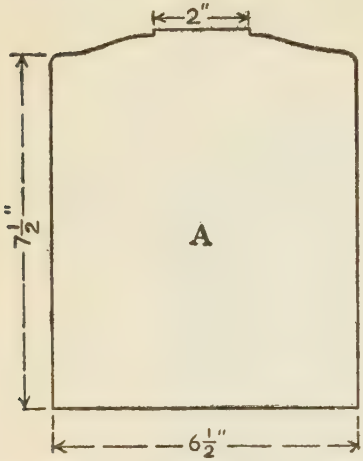


Fig. 163

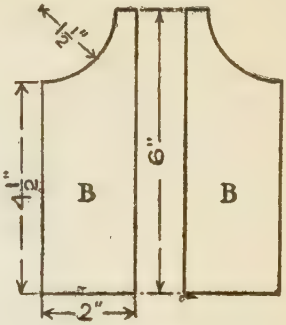


Fig. 164

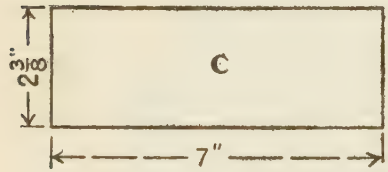


Fig. 165

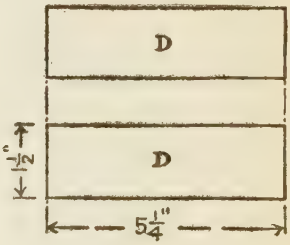


Fig. 166

FIGS. 163-166. PATTERNS FOR PARTS OF RACK FOR DODGERS

out the parts, and Figure 162 shows how to assemble them.

Stain, Paint or Enamel the rack, after sandpapering all surfaces and edges with No. 00 sandpaper, then screw a pair of screw-eyes into the top of the back board for hangers.

A MAGAZINE-RACK

If the church has a reading-room, there should be a rack like that shown in Figure 167 for current periodicals, because it displays them so that all titles are visible. The rack illustrated will probably care

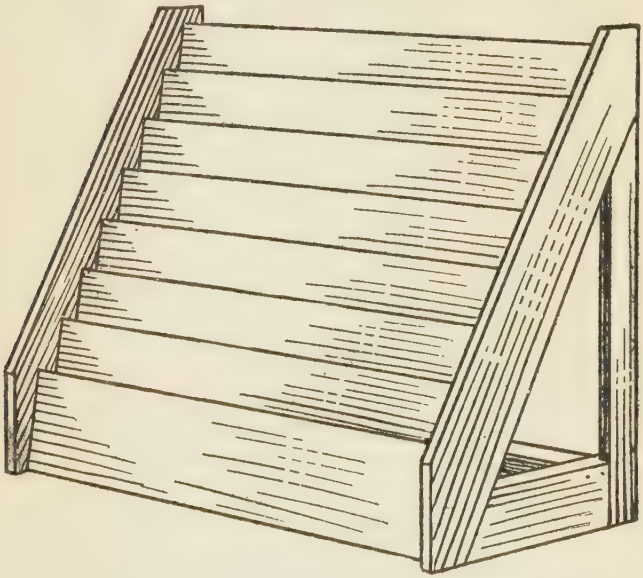


FIG. 167. A MAGAZINE-RACK FOR THE READING-ROOM

for all of the magazines that will be subscribed to by the librarian, but the plan is elastic and either a larger or a smaller rack may be built, according to requirements. For a small number of periodicals, a small rack can be built to stand upon a table or hang upon a wall.

Material. The rack can be built of pine, cypress,

redwood, oak, or any other wood desired. The furniture of the room in which it is to be used should be a factor in deciding the kind of wood, though it is possible to stain pine in imitation of other woods, with prepared wood-stain to be had at paint stores.

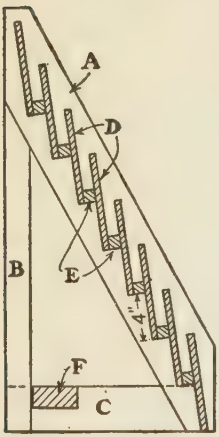


Fig. 168

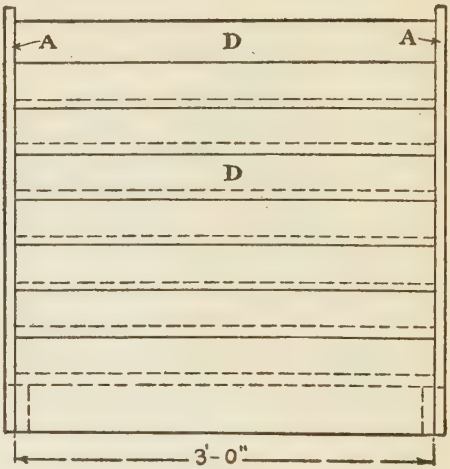


Fig. 169

FIG. 168. CROSS-SECTION OF MAGAZINE-RACK
FIG. 169. FRONT ELEVATION OF MAGAZINE-RACK

The Parts are lettered in the cross-section drawing of Figure 168, and the front elevation of Figure 169. Cut end stringers A from ⅞-inch or ¾-inch boards 6 inches wide. Rip a piece of the same width in half for the upright supports B. Partitions D should be of thinner stock—⅜-inch boards 8 inches wide, if you can get them. For the partition separators E (Fig. 168) use strips ⅞-inch square. Cut the base braces C and F from a 2-by-4.

Lay out an end stringer carefully by the detail of Figure 170, cut it out and use it for a pattern to mark around for the second piece. The base brace blocks C have notched ends (Fig. 171). The way to mark the cuts correctly is to place the piece of 2-by-4 against the stringer end and upright B, and scribe lines across the piece at the points of contact. Partitions D may be 7⅝ inches wide, or of whatever

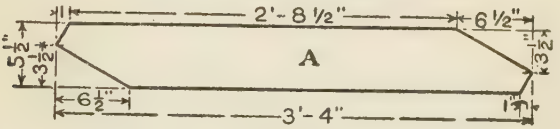


Fig. 170

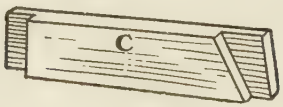



Fig. 171

FIG. 170. DETAIL OF STRINGERS FOR MAGAZINE-RACK
FIG. 171. DETAIL OF BASE BRACES

width your 8-inch boards happen to be. The length is indicated in Figure 169.

Assembling. The easiest way to assemble the partitions and stringers is to nail a partition board to each of the separator strips E, then to scribe a line on the back of each board, from end to end, 4 inches above the bottom edge (Fig. 168), which will give the height at which to fasten each partition board to the separator strip back of it. When you have carefully assembled the partitions in this manner, stand them on end upon one stringer, then upon

the other stringer, mark off accurately where the ends should come in relation to the edges of the stringers, and nail the stringers to them. Of course, if you do not locate the ends exactly on each stringer, there will be a twist to the rack and you will have to knock off one stringer and renail it.

Complete the assembling by fastening uprights B to the under edge of stringers A, fastening base braces C to the lower ends of stringers A and uprights B, and fastening brace F between base braces C.

Finish the magazine-rack in whatever way the librarian suggests. Before you apply the stain, paint or shellac, rub down all surfaces with sandpaper. It is best to round off the upper edges of the partitions to relieve them of sharpness. This can be done with sandpaper.

A THOMAS BAILEY ALDRICH BOOKRACK

In the Nutter House at Portsmouth, New Hampshire, memorial to Thomas Bailey Aldrich, hangs a bookcase which was one of this noted author's prized possessions. The bookcase has been made famous by "The Story of a Bad Boy." If you have read this book you will remember the bookcase. It will be an appropriate rack for the Sunday school library, so I am showing an illustration of it in Figure 172, and in Figures 173 to 176 working-drawings made from the original bookcase through the courtesy of Mrs. Aldrich.

Material. This bookcase is of plain design, and

its construction is as simple as it looks. All of its parts are butt-jointed. White-pine or yellow-pine,

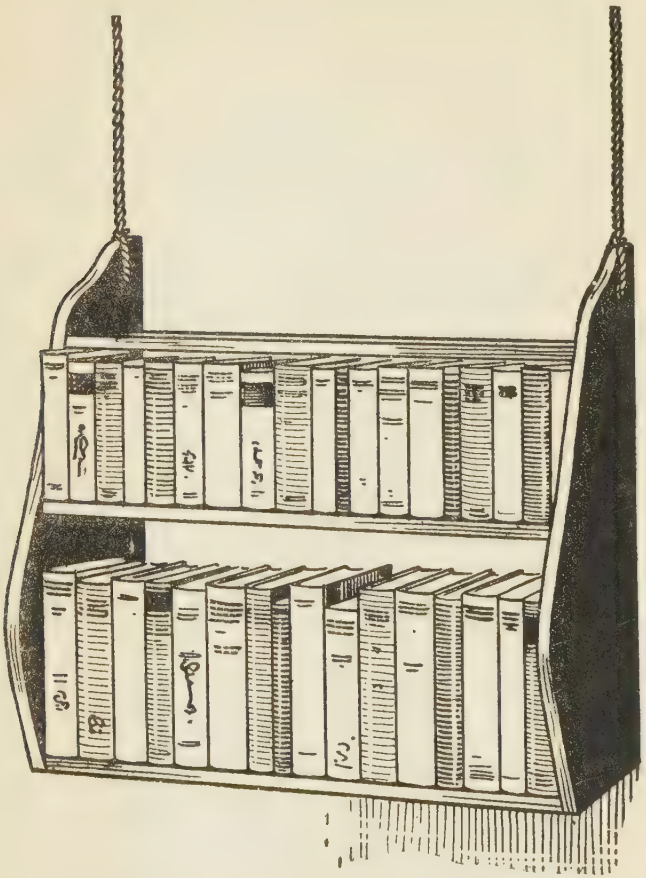


FIG. 172. A THOMAS BAILEY ALDRICH BOOKRACK
THE BOOKRACK MADE FAMOUS BY "THE STORY OF A BAD BOY"

whitewood, cypress, redwood, oak, chestnut, gum-wood, walnut or mahogany are woods which you can

work easily. Five-eighths inch is thick enough. A board ripped to 8½ inches wide will be needed for the end pieces, a board ripped to 7 inches wide for two shelves, and a 5-inch piece for a third shelf. The shelves can be fastened to the end pieces with finishing-nails, or round-head screws. Screws are preferable, because they hold better than nails, and their round heads make a neat appearance. Number 9 round-head blued screws 1¾ inches long should be used.

The Parts. Figure 173 shows an end view of the bookcase, with dimensions for assembling the shelves. The end pieces (A) are the first pieces to lay out (Fig. 173). First, mark off 26 inches for the length. Then lay off the starting and finishing points of the curves. Draw the curves as nearly like those upon the pattern as possible, and connect with a slightly curved line, which will give you the line for the front edge of the end piece. The curve is so slight that it is a good plan to draw a straight line as indicated in Figure 173, then draw the curved line inside it.

Cut one end piece and smooth up its edges with a plane and sandpaper, then use this as a pattern to mark around, to lay out the second piece.

The shelves are straight pieces. Straight means absolutely straight, with square corners and edges. If you do not cut them correctly, you cannot hope to obtain a square piece of work, and unless the ends of the shelf boards fit squarely against the end pieces, there will be no shoulder to the joints, and consequently no rigidity.

Fig. 174

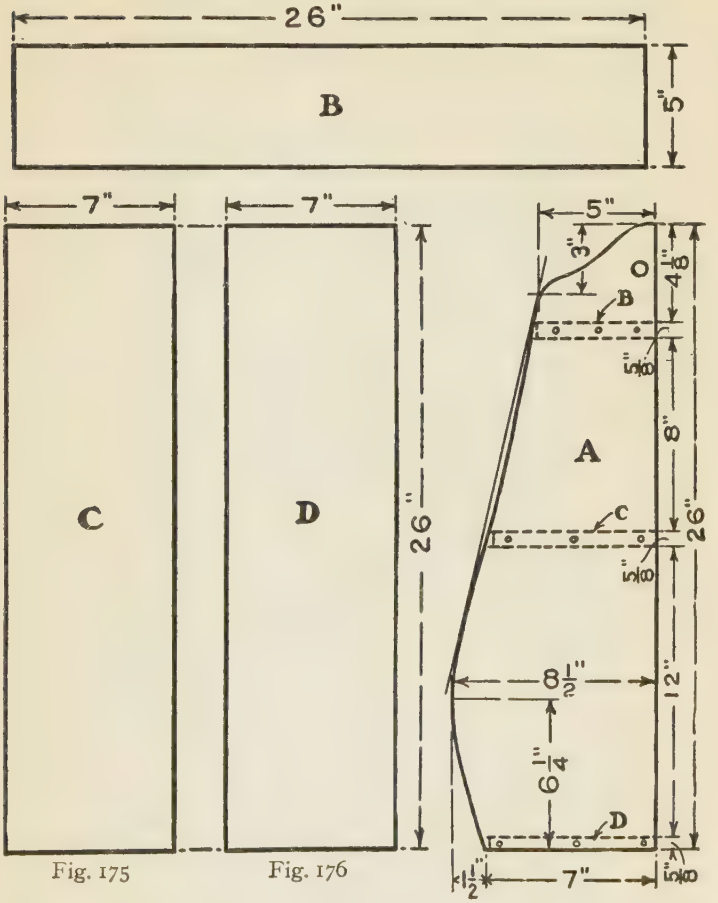


Fig. 175 Fig. 176 Fig. 173

FIG. 173. PATTERN FOR END OF RACK, SHOWING POSITIONS OF SHELVES
FIGS. 174-176. PATTERNS FOR SHELVES

Assembling. When all parts have been cut, mark upon the end pieces the positions for the shelves, as indicated by dotted lines in Figure 173; also, posi-

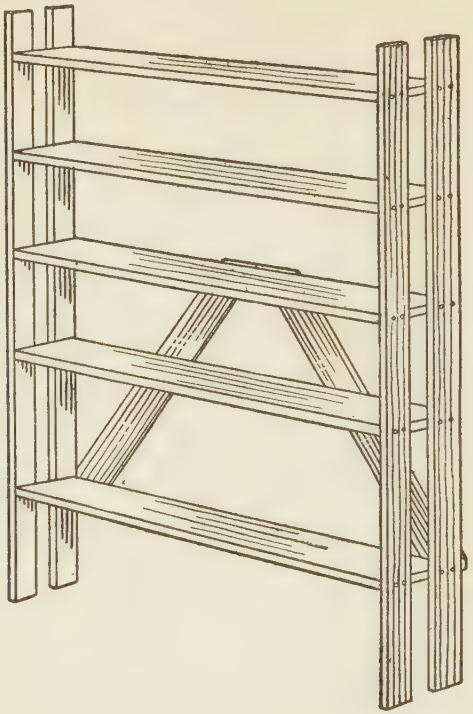


FIG. 177. ANOTHER FORM OF BOOKRACK. THIS IS AN ELASTIC DESIGN. MORE SHELVES MAY BE INCLUDED, AND FOR VOLUMES OF THE SIZE OF NOVELS 8½ INCHES IS ENOUGH SPACE TO LEAVE BETWEEN SHELVES

tions for three screw-holes for each shelf. Drill the screw-holes a trifle larger than the screws. Then the screws will draw up the shelves close to the end pieces.

Hangers. Note the hole through the end pieces near the top. This is for a wire or rope hanger, to hang the bookcase from nails or from a picture-molding. The bookrack can be supported upon brackets, instead, or can be stood upon the floor.

ANOTHER FORM OF BOOKRACK

Open-shelf bookcases or bookracks, like the one shown in Figure 177, can be built quickly, require little material, and can have as many shelves as are needed to take care of the school's library; or several units may be built and placed side by side. For books of the dimensions generally used for novels, 8½ inches is sufficient space to leave between shelves. These are matters for your librarian to decide.

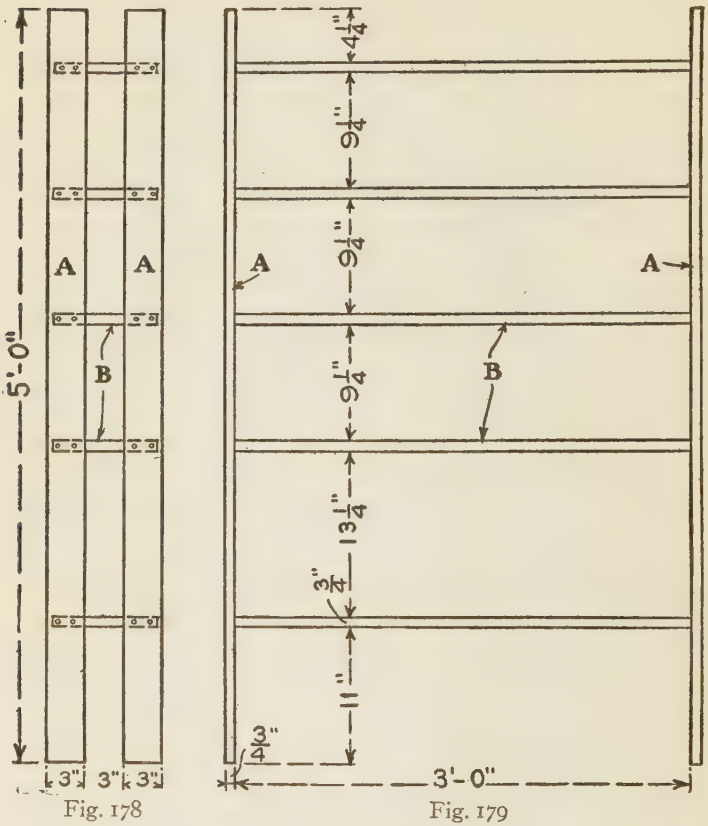
Material for the bookcase in Figure 177 can be any one of the woods suggested for the other bookrack. The stock should be ⅞-inch thick, and 8 inches is wide enough for the shelves. Buy No. 9 round-head, blued screws, 1¾ inches long for assembling.

Cutting the Parts of this case is easy because all ends are straight. The dimensions for end strips A are given in Figure 178, the length for shelves B is given in Figure 179.

Assembling. When the pieces have been cut, mark the positions for the shelves on the end strips. Then mark the places for the screws, two to a shelf, and drill holes through the strips at these points. These holes should be a trifle larger than the shank of the screws. It will be easier to drive home the screws if

you first drill holes in the ends of the shelves. These holes should be smaller than the screws.

Without a back to make this bookcase rigid, it



FIGS. 178 AND 179. SIDE AND FRONT ELEVATIONS OF BOOKRACK

will become rickety in time, unless it be fastened to a wall, or stood in a corner where the walls will support it. If neither of these schemes is feasible,

FIG. 180. A BOOKCASE WITH A CURTAINED FRONT

[*Facing page* 122

fasten a pair of diagonal braces across the back as shown in Figure 177. It is not necessary to run these higher than the third shelf. Screw them to each of the shelves that they cross, with two screws to a shelf.

A BOOKCASE WITH A CURTAINED FRONT

For dust-tight bookcases, nothing comes nearer to perfection than the so-called sectional bookcases of approved makes. But these are expensive pieces of equipment, and often out of the question. Built-in cases with glass doors fitted by one experienced in cabinet-making are to be recommended as the next in order; home-made cases with wallboard paneled doors, like the filing-cabinet in Figure 193, Chapter IX, though probably not as tight, will keep out most of the dust. Then there is the type of open-front bookcase with rod and curtains, not tight by any means, but better than an open-shelf bookrack. A bookcase of the last mentioned type is shown in the photograph of Figure 180. Working details of its construction are shown in the end elevation of Figure 181, and the front elevation of Figure 182.

The Material used for the bookcase may be any of the kinds of wood suggested for the racks previously described. The ends of the case, and the shelves, should be cut from 10-inch boards; the top of the case should be cut from a 12-inch board. The back of the case should be enclosed. A large sheet of wallboard is better than boards for the purpose.

Cutting the Parts and Assembling should be done

as described for the bookracks. Use three screws for each shelf-end. When the ends, shelves, and top have been assembled, test the angles to make

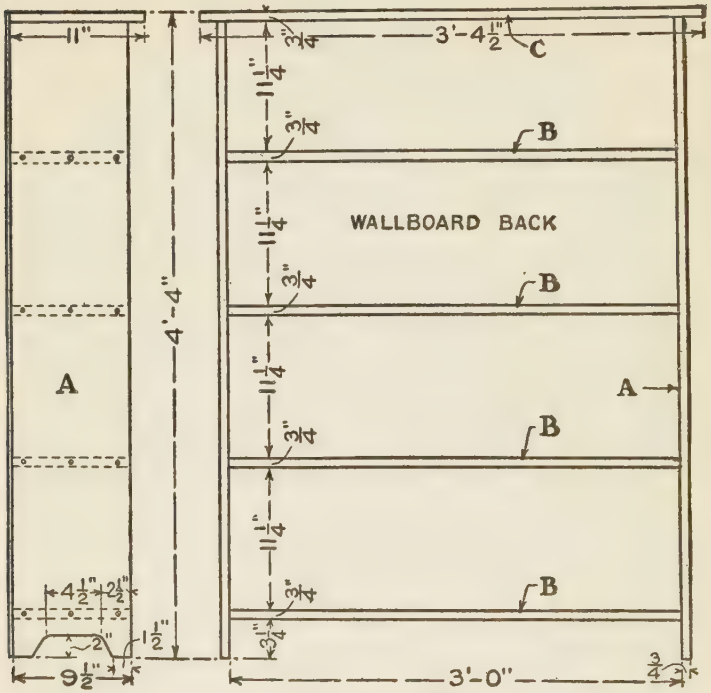


Fig. 181 Fig. 182

FIG. 181. END ELEVATION OF BOOKCASE SHOWN IN PHOTOGRAPH OF FIGURE 180
FIG. 182. FRONT ELEVATION

sure that they are right angles. Then glue the wallboard backing to the rear edges of the end pieces and shelves, and drive in nails to reënforce the glue.

Finishing. A number of suggestions have been

given on preceding pages for finishing wood. The kind of finish to use should be determined by the furniture of the room in which the article is to be kept.

If you are going to stain the wood, you can either buy ready-prepared stain of the color and shade desired or you can mix up a home-made stain of oil-paint, boiled linseed-oil, and turpentine. After staining a surface and rubbing off the surplus stain, apply a coat of shellac to set it. After that has dried, apply two coats of flat varnish or a coat of wax.

Open-grained woods, such as oak, are generally "filled"; that is to say, their grain is filled with prepared wood-filler. This is necessary for a highly polished varnished or enameled surface, but can be omitted from surfaces to be waxed.

Surfaces to be painted should be given at least two coats of paint; three coats are better. If enamel paint is to be used, first apply a coat of flat paint—this should be paint without linseed-oil. If there is any puttying to be done, do it after the first coat of paint has been applied; it will hold better then.

Chapter IX

FILING-CASES AND CABINETS

A Letter-Size Filing-Cabinet—A Filing-Case—A Cabinet for Pamphlets and Pictures.

Every Sunday school needs files of several kinds in which to keep correspondence, printing, stationery, pamphlets, lesson pictures and various papers related to its activities. Some Sunday schools have filing-cabinets, but the stock sizes of filing equipment do not answer every purpose, so the filing systems are not always as efficient as they might be. On this and following pages are several plans for easily made cases and cabinets that will meet many needs of the school. An advantage of home-made cabinets, besides the saving in cost, is that the given dimensions can be altered if need be to meet any special requirements.

A LETTER-SIZE FILING-CABINET

The filing-cabinet in Figure 183 is made of a box obtained at a paint store, but probably you can get one quite as strong at your grocery. The inside measurements of the cabinet are: width 12 inches, depth 10½ inches, length 22½ inches. The length may be varied, but the specified width and depth should be used because they are standard measure-

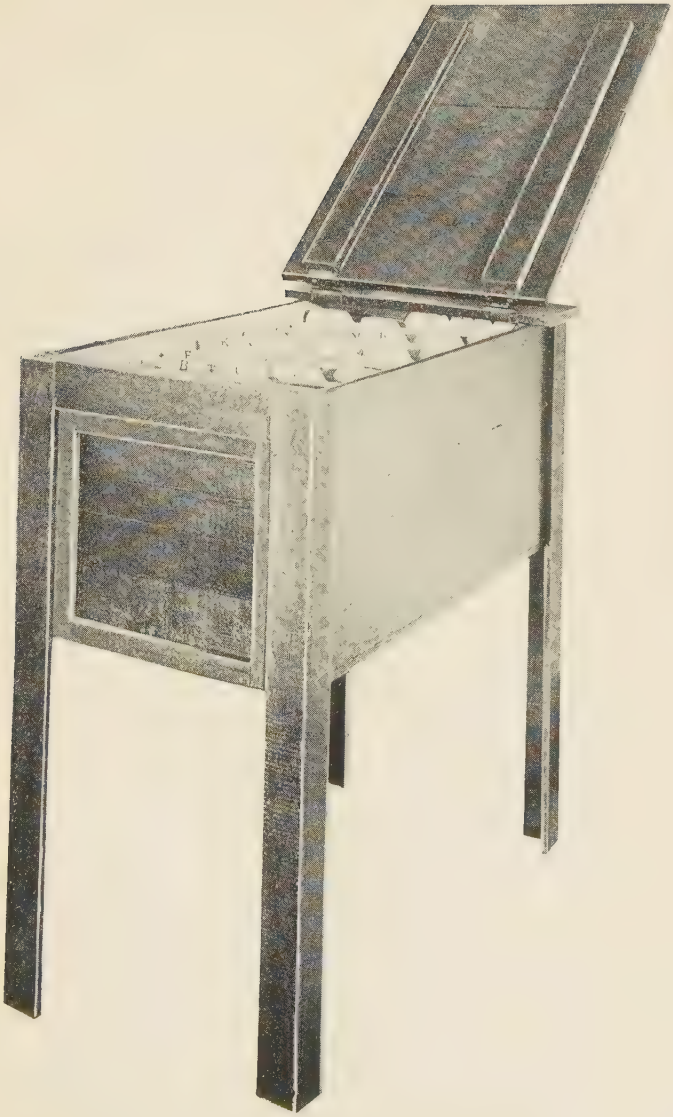
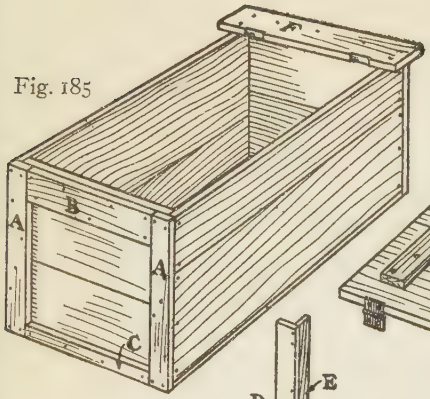


FIG. 183. A LETTER-SIZE FILING-CABINET

[*Facing page* 126

ments, and index cards and folders can be bought to fit.

Fig. 185



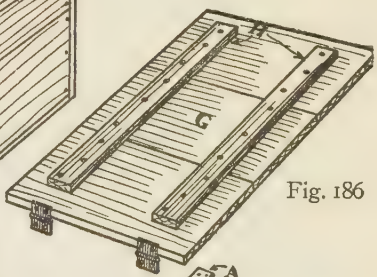
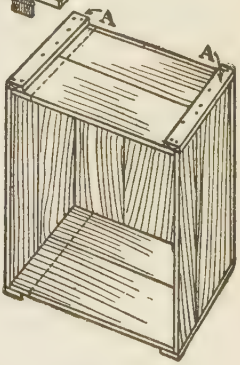


Fig. 186



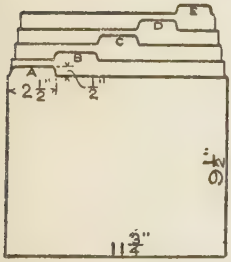


Fig. 188 Fig. 187 Fig. 184

FIG. 184. BOX FOR FILING-CABINET
FIG. 185. READY FOR THE HINGED TOP
FIG. 186. THE HINGED TOP
FIG. 187. LEG FOR CABINET
FIG. 188. FILE CARDS

Altering the Box. Probably your box will require alteration, just as mine did. Dotted lines in Figure 184 indicate how my box was cut. The desired width

was marked off on the box ends, then the ends were cut along these lines, the side boards removed were renailed to the altered box ends, and the bottom boards were trimmed flush with the box side.

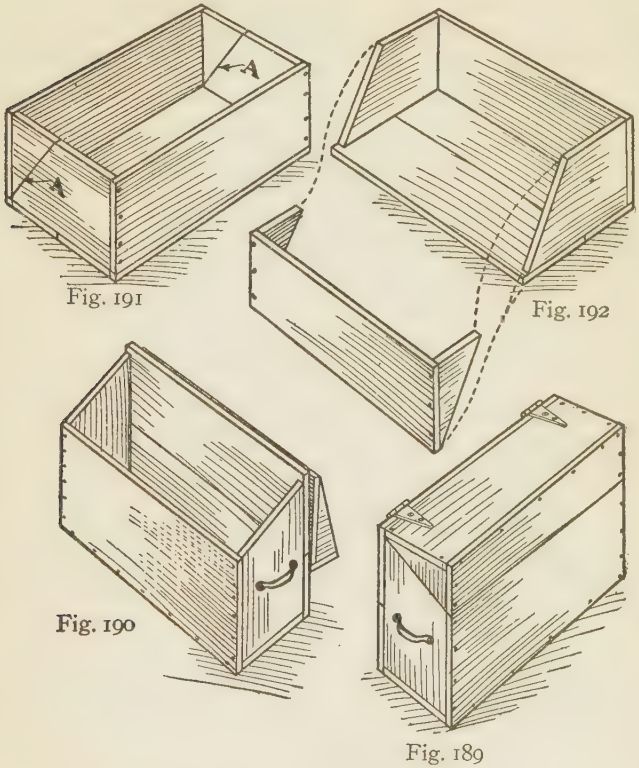
The pair of battens A upon the box ends must be left for reënforcement. Fit strip B (Fig. 185) between their upper ends, and strip C between their lower ends, thus forming a panel. Strip B should be wider than strips A, and strip C should be narrower, so when the leg strips are nailed to the box corners, and a strip of equal width is fastened between their upper ends, the exposed margins of strips A, B, and C will be equal (Fig. 183).

The Legs are built up of two strips (D and E, Fig. 187). These may be laths planed smooth. Cut them 26 or 28 inches long so that the cabinet will stand about desk high. Make strip E narrower than strip D to allow for the thickness of the over-lapping edge.

The Cabinet Top. Strip F, nailed across the back of the box (Fig. 185) is the hinge-strip to which the cabinet lid is hinged. The notches on the inside edge receive the hinges. Cut strip F 4 inches wide, and of the right length to project ½ inch beyond the faces of the leg strips. Figure 186 shows the lid. It can be made of several boards, depending on the width of the material at hand. Fasten together the boards (G, Fig. 186) with the pair of battens H, putting on the battens with screws. It is more of a trick to set hinges into the edges of work than to put them upon the surface. The notches must be cut ac-

curately, and the screw-holes must be located correctly, or the lid will not shut tight.

Index Cards. Figure 188 shows cards of standard



FIGS. 189 and 190. A FILING-CASE
FIG. 191. SAW THROUGH BOX ENDS ON LINES A
FIG. 192. THE SMALLER PART OF THE BOX BECOMES THE COVER

size. The projecting index tabs are laid out in five positions. If you make a set of the cards for your cabinet, cut five of each position. Cut them out of

light-weight cardboard. Letter the tabs with the letters of the alphabet, or with subject titles. Ready-made cards can be bought at one cent each.

Finishing. When the filing-cabinet has been completed, stain or paint the wood. Let the furniture of the room in which the cabinet is to stand decide the finish.

A FILING-CASE

The filing-case shown in Figures 189 and 190 is of handy form for the filing of lesson pictures. It can be made of a grocery box cut down to the exact size needed.

Saw down the ends of the box on a diagonal line, as indicated by the lines A in Figure 191, and remove the box side to which the small triangular pieces are attached. This will give you the two parts shown in Fig. 192. Nail the box-cover boards to these sections, in their original positions, and hinge the smaller section to the larger one in the manner shown in Figure 189, for the lid.

A pair of handles screwed to the box ends, and a couple of coats of paint, will finish the outside of the cabinet. The inside may be partitioned into compartments with wallboard.

A CABINET FOR PAMPHLETS AND PICTURES

The cabinet shown in Figure 193 was designed as a filing-case for pamphlets and pictures with the upper portion arranged for Sunday school lesson

quarterlies, and the lower portion for lesson pictures. The upper compartments will hold the first,

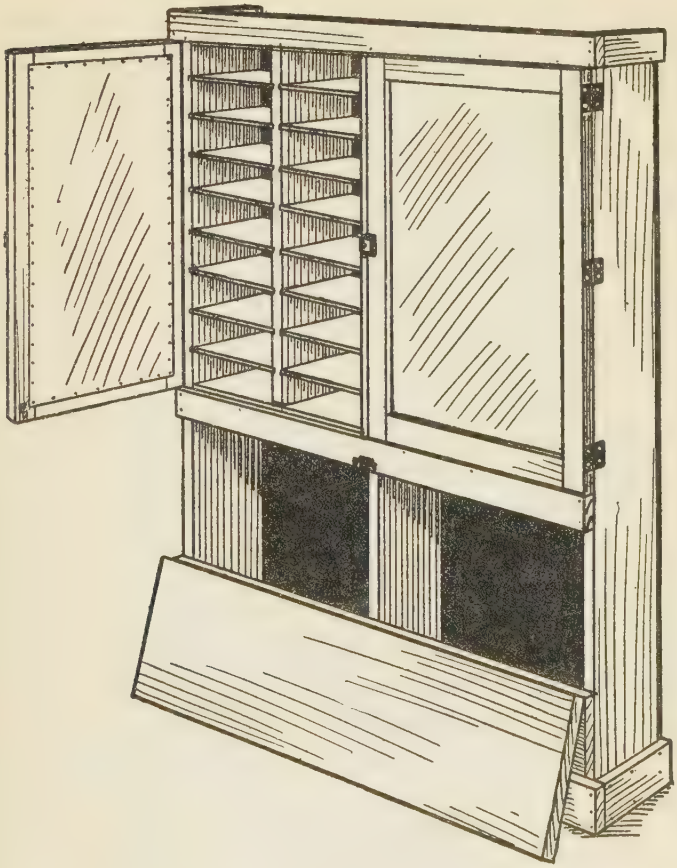


FIG. 193. A FILING-CABINET FOR PAMPHLETS AND PICTURES

second and third year pamphlets of the junior, intermediate and senior departmental graded courses,

with four quarterly pamphlets filed in each tier of compartments. As the beginners and primary series

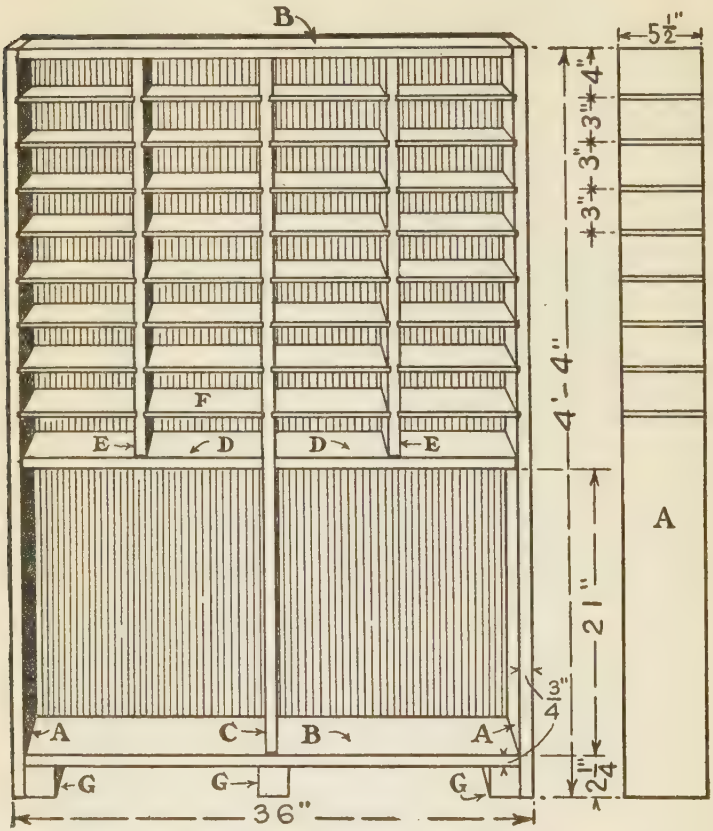


Fig. 194 Fig. 195

FIG. 194. FRONT ELEVATION OF UNTRIMMED CABINET
FIG. 195. DETAIL OF GROOVED END

of quarterlies are larger, it would be best to make a separate cabinet for them.

This filing-cabinet will meet the needs of Sunday schools that find it economical to save their quarterly lesson pamphlet left-overs, for future use. The same form of construction may be used for a cabinet for other pamphlets, leaflets and single sheets; and a cabinet for the primary room will be useful for sand-table accessories and other lesson helps.

The Construction. The pamphlet-picture cabinet is made of boards and wallboard. Figure 194 shows a front elevation, and Figure 195 gives dimensions for end boards A. Cut vertical partition C of the same width as sides A, but make partitions E $\frac{5}{16}$ inch narrower, to allow for clearance of the wallboard door panels. Instead of resting the ends of the short wallboard shelves F (Fig. 194) upon cleats, which would take up a great deal of valuable filing space, groove end boards A, and the intermediate vertical partitions C and E, to receive the shelf ends, as shown in Figure 196. The spacing of the grooves is marked in Figure 195. Make their width such that the wallboard shelves will fit snugly in them, and cut them $\frac{1}{4}$ inch deep. Cut the sides of the grooves with a saw, and split out the wood between the "kerfs," or slots, with a $\frac{1}{4}$-inch chisel. Mark out and cut the grooves carefully.

Assembling. From Figures 194 and 195 you can get the lengths for boards B and D, and vertical boards C and E. Assemble these pieces and side pieces A as shown in Figure 194, then cut a piece of wallboard of the right size for a back, and tack it to the framework. Before fastening the back, test all corners of the framework to make sure that they are

square. Next, cut shelves F of the same width as vertical partitions E, coat their ends and rear edge with glue, and slip them into the grooves cut for them. If the vertical boards have been spaced equidistantly, the shelves can be cut of exactly the same size. Fasten blocks G to the under side of bottom shelf B to make the base solid. If the cabinet is to

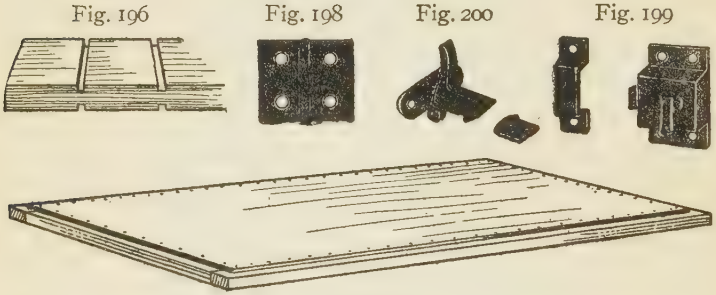


Fig. 197

FIG. 196. GROOVE THE PARTITIONS TO RECEIVE THE WALLBOARD SHELF ENDS
FIG. 197. DOOR WITH WALLBOARD PANEL
FIG. 198. USE THREE HINGES LIKE THIS FOR EACH DOOR
FIG. 199. CUPBOARD LATCH AND LATCH-POCKET
FIG. 200. CUPBOARD CATCH AND PLATE

be mounted upon casters, fasten these to the outer two of the three blocks.

The Front. Figure 193 shows how to complete the cabinet with a narrow strip nailed across the front and ends of the base, and a cap band nailed across the front and ends of the top. Fasten a 3-inch board across the front of the cabinet at the top of the bottom compartments, and enclose the space between it and the baseboard with a narrow and a wide board,

nailing the narrow board, and hinging the wide board to it for a drop-leaf.

The Cabinet Doors have frames made of 2-inch strips, and wallboard panels (Fig. 197). Tack the panels to the frames with carpet tacks.

Use three pairs of 2-inch brass hinges (Fig. 198) for hinging the cabinet doors, and place them on the edges of the frames, and sides of the cabinet, as shown in Figure 193. Cut away the wood so the hinge flaps will set flush with the surface of the wood. Fasten a cupboard latch and a latch-pocket (Fig. 199) upon the right-hand door, and tack a molding to the door, above and below the latch, allowing it to project enough to cover the crack between the doors when they are shut. Fasten a cupboard catch of the form shown in Figure 200 to the inner face of the left-hand door. Attach a cupboard latch and latch-pocket to the drop-leaf of the lower compartments.

Finishing. When the cabinet has been completed, paint the outside with two coats of paint. The wallboard will require a third coat. The inside of the cabinet, with the exception of the front edges of the wooden partitions, need not be finished.

Chapter X

SCRAPBOOKS

A Home-Made Scrapbook—Covers—Leaves—Punching—Lacing—Screw-Posts—Arranging Clippings—Indexing—An Envelope Scrap-File.

Keeping a scrapbook becomes a hobby that usually lasts through one's lifetime; and it is a worth-while hobby, too, giving one a record of favorite pictures, verse, anecdotes, and miscellany which will be perused with pleasure in later years.

The scrapbook has its practical use in the church and Sunday school also. Your minister will find one convenient to hold selections he has clipped for reference; there should be one in which to paste programs, dodgers, tickets and other printed matter for a record of church and Sunday school activities, and your class should have one for its own use.

A HOME-MADE SCRAPBOOK

Figure 201 shows a good home-made scrapbook.

Covers for a scrapbook can be made of heavy cardboard cut from drygoods boxes, but a sheet of wallboard or of binder's board will be better.

A detail of the front cover is shown in Figure 202. After cutting it of the right size, cut a strip 1 inch wide from the binding-edge, and then with a piece of

drilling 3½ inches wide hinge the strip to the edge you cut it from. Coat the hinge-strip with glue, and fold it over the strip of cardboard so its edges will lap over the upper and lower surfaces of the cover, as shown. It is not necessary to make a hinge for the back cover; in fact, the book will be stronger if

Fig. 202 Fig. 204 Fig. 205

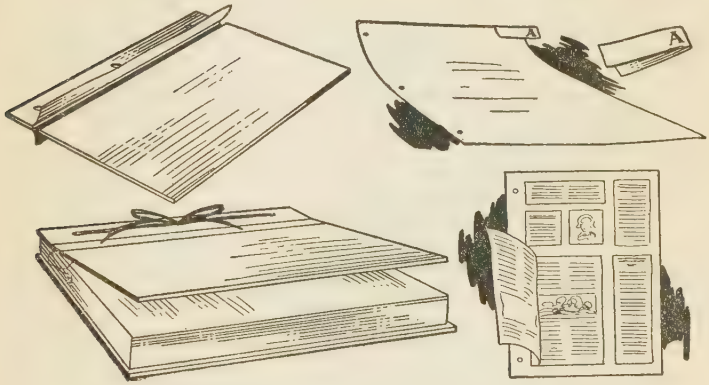


Fig. 201 Fig. 203

FIG. 201. A SCRAPBOOK WITH COVERS LACED WITH A SHOE-STRING
FIG. 202. FRONT COVER AND STUB FOR BINDING-EDGE
FIG. 203. ARRANGEMENT OF SCRAPS ON THE PAGES
FIG. 204. AN INDEX SHEET
FIG. 205. TAB FOR INDEX

the back cover is not hinged. Cloth tips should be glued upon the cover corners as shown in Figures 206 and 207.

Punch three holes through the back cover and the hinged strip of the front cover, one near each end and one at the center, cutting them with the small blade of a knife. These are for laces or posts to run through.

The Leaves should be of manila wrapping-paper. You can purchase this from a merchant in town, or through a printer. The size of the scrapbook pages should be regulated, to a certain extent, by the size of sheets of paper you buy, to save waste in cutting. You can cut the sheets with a knife or scissors, or have a printer cut them. The covers should be large

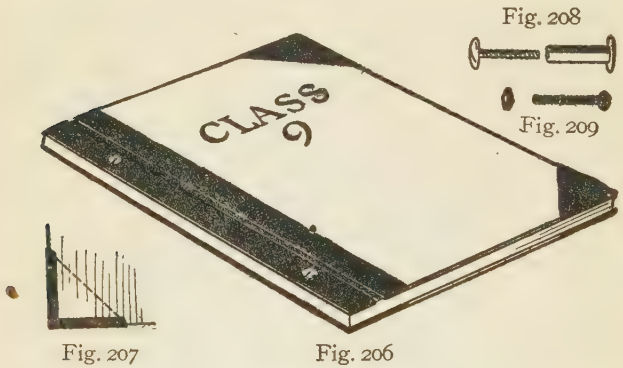


Fig. 208

Fig. 209

Fig. 207

Fig. 206

FIG. 206. A SCRAPBOOK WITH COVERS HELD BY SCREW-POSTS
FIG. 207. DETAIL OF TIP ON COVER CORNERS
FIG. 208. TELESCOPIC SCREW-POST
FIG. 209. STOVE-BOLT POST

enough to project ¼ inch over the leaves. Unless the cardboard is heavy, it will be best not to make a large book, because large pieces of light-weight cardboard will warp.

Punching. If you haven't a punch, place the leaves between the covers in their correct position, clamp all together with curtain-stretcher clamps, and drill holes through them with a 3/16-inch drill. You can ask a printer to punch the holes, if you do not care to drill them.

Lacing. You may bind the covers and leaves of your scrapbook with a shoe-string (Fig. 201). Run it down through the center holes, along the outside of the back cover to one end, up through the holes at that end, along the front cover to the holes at the other end, down through these holes, along the back cover to the center holes, up through them, and tie the ends in a bowknot.

Screw-posts will hold the covers and leaves more firmly than a lacing. Figure 208 shows a telescopic post made for the purpose; Figure 209 shows a stove-bolt post.

ARRANGING CLIPPINGS

Figure 203 suggests how to arrange clippings on a scrapbook page. If an article occupies both sides of a clipping, paste it along one margin, as shown.

INDEXING

You may not care about indexing your pages, but, if you do, Figures 204 and 205 show how to do it with tabs of heavy paper, lapping and pasting these to both sides of the sheets.

AN ENVELOPE SCRAP-FILE

An envelope filing system like that shown in Figures 210 and 211 is good. Some use it in place of a scrapbook. You might make one for your minister to keep copies of his sermons, notes, and miscellany in.

Buy a quire of envelopes 9, 10, or 11 inches long, punch three holes through the pack along the bottom edge, to run a binding lacing through, and use a

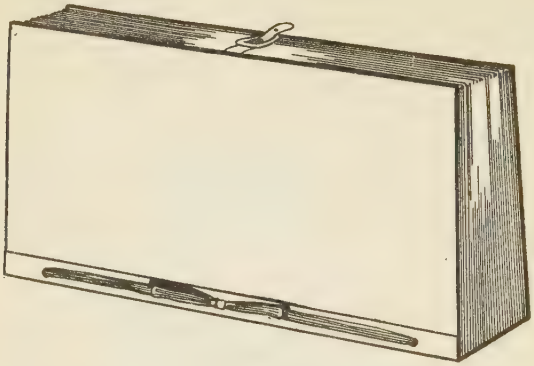


Fig. 210

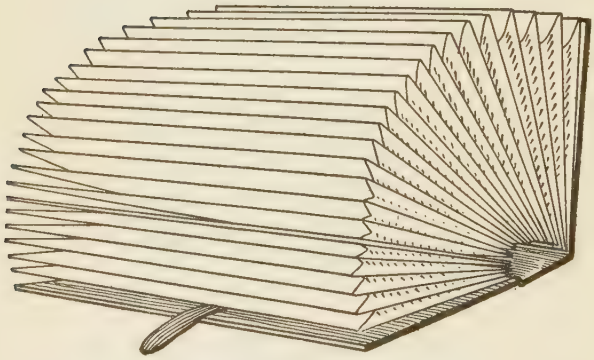


Fig. 211

FIGS. 210 AND 211. AN ENVELOPE SCRAP-FILE

shoe-string for a lacing, running it through the holes in the manner described for the scrapbook.

The illustrations suggest covers. If you wish to

add these, cut them out of cardboard, making them ¼ inch larger than the envelopes all around, and bind them with linen or buckram. Fasten a small buckle and strap to the opening edges of the covers.

Letter classifications upon the envelope flaps, or rule lines for the captions, if the file is for your minister's use.

Chapter XI

FOR THE SUNDAY SCHOOL CLASS

A Class Table—A Pedestal—A Class Gavel—A Class Screen—A Chair Hat-Rack.

On the following pages are a number of pieces of equipment especially useful to the Sunday school class. Additional ideas are presented in other chapters. If you will make some of these things, you will start a rivalry in the Sunday school, with each class vying with the others to become the best equipped.

A CLASS TABLE

There is often a scarcity of small tables in the Sunday school room. Each class could use one, and I would suggest that if your class is without this piece of equipment, you make a small table like that shown in Figure 212. This one has a box compartment in its top that can be used for record books, gavel, pencil, pen, ink, lesson leaflets, pictures, maps and other class material.

The Box Compartment is made of a box 10 inches deep, 14 inches wide and 20 inches long. Remove one side, and nail the cover boards, or other boards, to the top (Fig. 213). Nail strips A and B to the

bottom and end boards, as shown in Figure 213, to frame the opening for the hinged drop-leaf.

The Drop-leaf should be one piece of board. Buy a pair of 2-inch brass or iron hinges, and attach them as shown in Figures 215 and 216, setting them in the

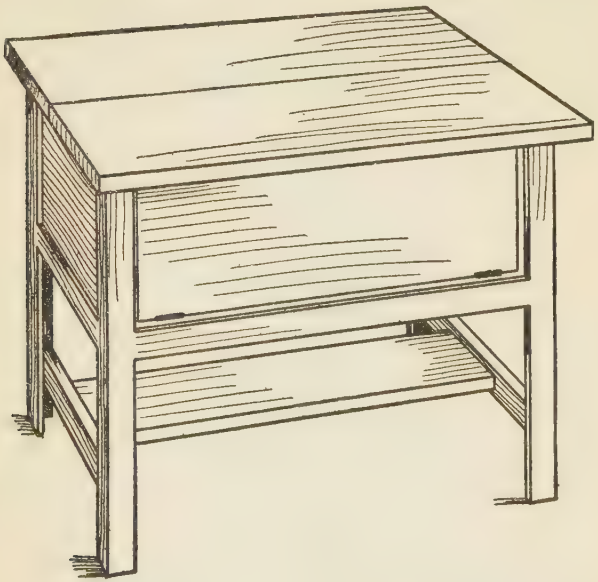


FIG. 212. A CLASS TABLE

edge of the drop-leaf board, and in the upper surface of strip A. A cupboard spring-latch at the top of the drop-leaf, and pieces of brass chain attached to the drop-leaf and the box ends, to keep the leaf from opening farther than it should, will complete the box compartment.

The Legs are built up of lattice-strips 1¾ inches wide and 27 inches long. Each leg is made of a

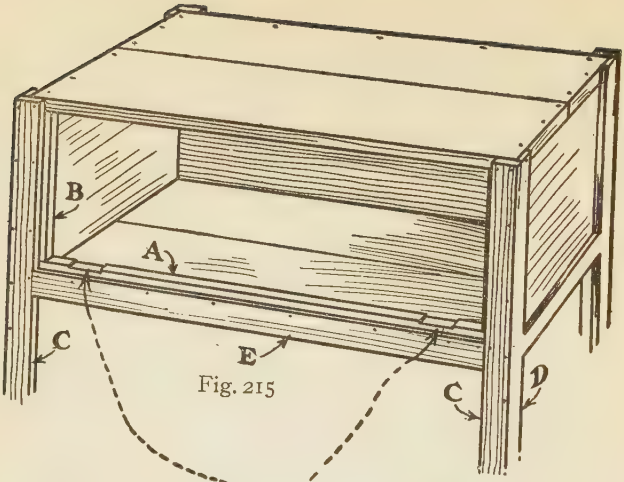


Fig. 215

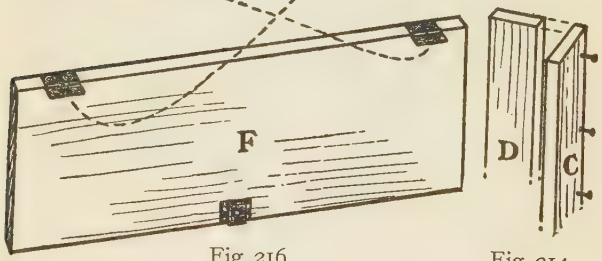


Fig. 216

Fig. 214

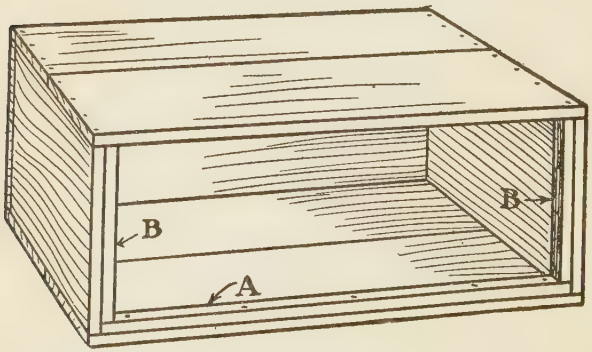


Fig. 213

FIGS. 213-216. DETAILS OF THE CLASS TABLE

strip of full width (C, Fig. 214), and a strip cut ⅜ inch narrower (D), the former strip overlapping an edge of the latter. Nail the corner strips together

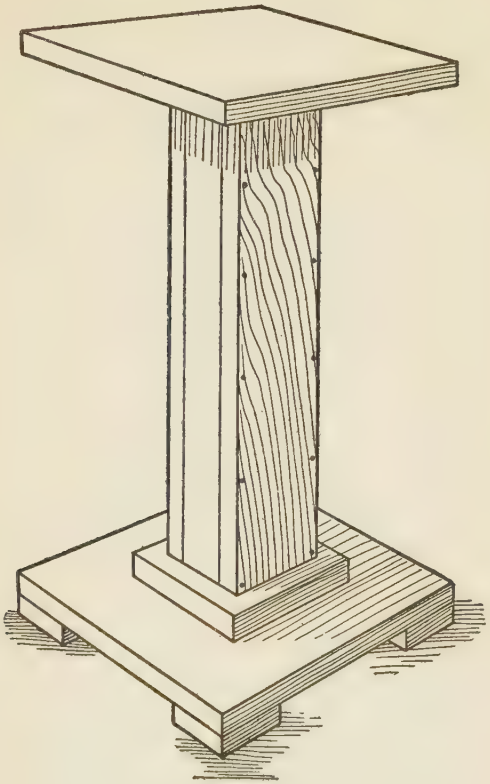


FIG. 217. A PEDESTAL

with finishing-nails, then nail them to the box corners.

The Table Top should be made of ⅞-inch boards,

and should be large enough to project about 1½ inches over the box compartment on all sides. If you can have a top glued up at a mill, do so; otherwise, make as good a joint as you can, and fasten the boards to the box with finishing-nails.

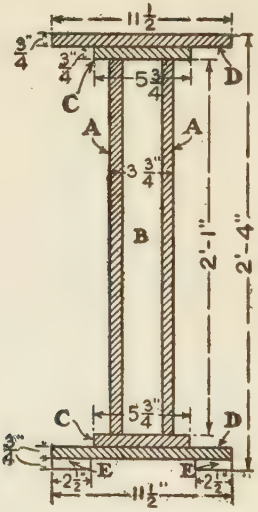


FIG. 218. CROSS-SECTION OF PEDESTAL

Finishing. You can finish the table with a wood-stain, shellac and varnish, or with enamel paint. Two coats of enamel will be required. Putty joints and nail-holes between the first and second coats.

A PEDESTAL

The pedestal shown in Figure 217 may be used for different purposes, including that of a class table.

The cross-section of Figure 218 gives dimensions for cutting the parts.

The Center Post is built up of box boards. Cut two strips 3¾ inches wide by 27 inches long for sides A, and two pieces 2½ inches wide by 27 inches long for sides B (Fig. 219). Nail sides A to the edges of sides B, then trim 1 inch from each end of the assembled post to make it exactly 25 inches long.

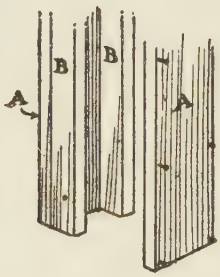


FIG. 219. DETAIL OF POST

Be careful in sawing off the ends to make them square.

The Top and Base Boards C (Fig. 218) should be centered upon the end of the post, and nailed to the edges of side pieces A and B. Nail them to the post ends. Cut the top and base boards D and fasten them to pieces C, screwing or nailing through pieces C into them. To complete the base, cut the corner blocks E and nail them to the corners of base board D.

Finishing. If the wood has a pretty grain, stain and wax will give an attractive finish. If you have used box boards, it will be better to paint the wood.

A CLASS GAVEL

If you have wood-turning in manual-training at school, you can probably get permission to turn a gavel like the one shown in Figure 220. If not, cut two pieces from cherry tree branches, one 1¼ inches in diameter (with the bark removed) for the head,

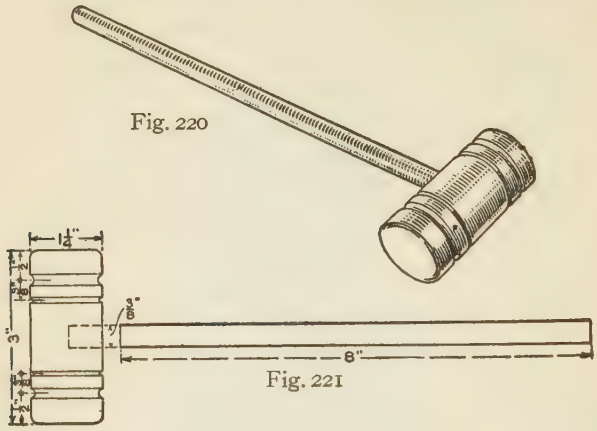


FIG. 220. A CLASS GAVEL
FIG. 221. DETAIL OF HEAD AND HANDLE

the other ⅜ inch in diameter for the handle. The other measurements are given in Figure 221.

If you must make the gavel without a lathe, you can cut the grooves in the head very easily with files, using a rat-tail file for making the larger grooves and a three-cornered file for the smaller grooves. Round the ends of the head with a file, also. Bore a hole in the head ⅝ inch deep, and glue the handle in it.

Finishing. You can put a very nice finish on your

cherry-wood gavel, by shellacking it with white shellac, rubbing this down, and waxing; or by shellacking, then applying two coats of varnish. But before you apply the finish, rub down the wood with No. 00 sandpaper to make it very smooth.

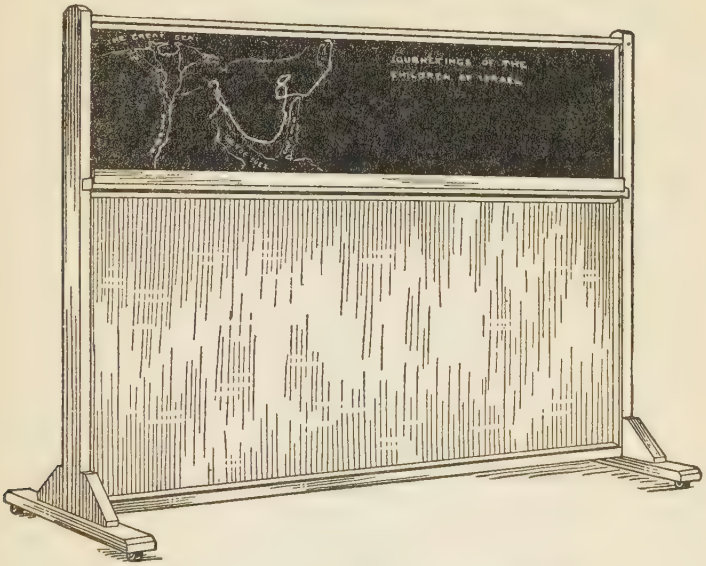


FIG. 222. A CLASS SCREEN AND BLACKBOARD

A CLASS SCREEN

Class screens are growing in popularity. There are a number of forms in use but probably none more satisfactory than that shown in Figure 222 which is similar to screens designed by my friend, Rev. George T. Arnold, for use in his Sunday school. By slating the upper third of the screen, on both sides, it will serve as a blackboard for two classes.

This screen serves other purposes, too; it may be used as a support for scenery for plays, as a partition for dressing-rooms, and as a side of a stall or booth for bazaars.

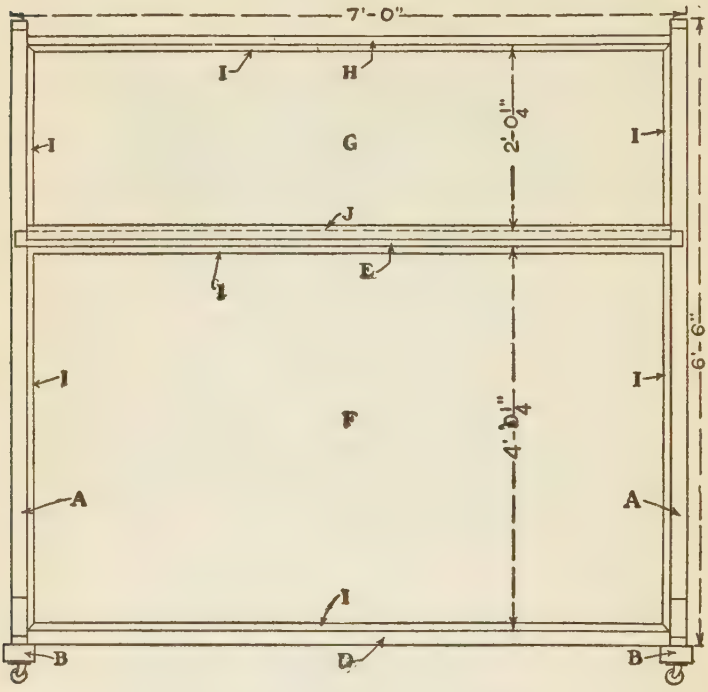


FIG. 223. FRONT ELEVATION OF SCREEN

The screen is a large piece of equipment, but as it is mounted upon casters it can be moved to one side easily and quickly. Of course, the size can be reduced if a smaller screen is desired. If several are to be built, it is desirable to have them of uniform size and shape. You and your chum would not find

it much of an undertaking to build enough screens for all classes of your Sunday school.

The Material. The lettering on the front elevation (Fig. 223) and the cross-section (Fig. 224) des-

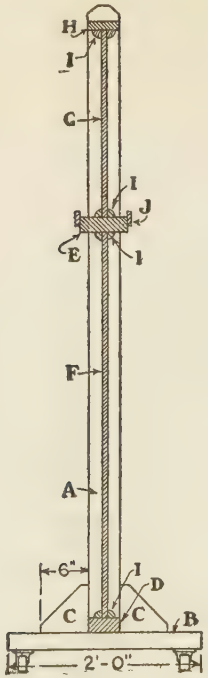


FIG. 224. CROSS-SECTION OF SCREEN

ignates parts of the screen. Corner posts A, runner blocks B, and base plate D are 2-by-4s, cap piece H is a 1-by-4, chalk-rail E is a 2-by-6, base braces C are cut out of 2-by-6 inch stuff, moldings I are quarter-rounds, and the chalk-rail strips J are lattice-strips. All of this stock should be of soft pine, cypress or

other light-weight, easily worked wood. Special instructions should be given when ordering that the pieces be selected for straightness. If they are not straight, the screen's framework will be twisted from end to end.

The body of the screen is made of wallboard. Buy a piece 48 inches wide for the lower two-thirds, and a piece 24 inches wide for the upper third. As this

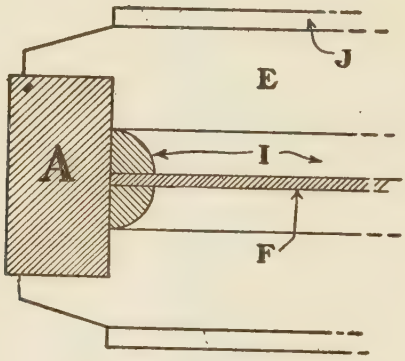


FIG. 225. CROSS-SECTION OF CORNER OF CLASS SCREEN

material can be purchased in 7-foot lengths, there will be only a few inches waste, which will take care of broken corners.

The Corner Posts. Cut posts A of the length given in Figure 223, and cut off the top corners as shown in Figure 224. Cut runner blocks B (Fig. 224) next, and spike them at their center to the bottom of the posts. Then cut brace blocks C (Fig. 224) and nail them to both A and B.

The Connecting Pieces. When the corner posts have been prepared, cut base plate D, the chalk-rail

E, and the cap H. Plate D and cap H fit between the posts; rail E is notched at each end to fit around the posts as shown in the plan of Figure 225, and the edges are beveled off at the ends. Rest base plate D upon runner blocks B, and spike posts A to its

FIG. 226. A CHAIR HAT-RACK

ends. Then fasten the 2-by-6 chalk-rail E to the posts 4 feet ¼ inch above it, then the 1-by-4 cap piece H 2 feet ¼ inch above the chalk-rail E.

The Panels. The quarter-rounds I hold the wall-board in place in the screen framework. Cut enough pieces of the right lengths with mitered ends, to run around the four edges, on both sides of the lower

piece of wallboard. Frame one side of the lower opening with four of the strips, nailing them to posts A, plate D, and rail E (Fig. 224); then cut the wallboard of the right length with a saw or sharp knife, set it in place and fasten it with the other four strips.

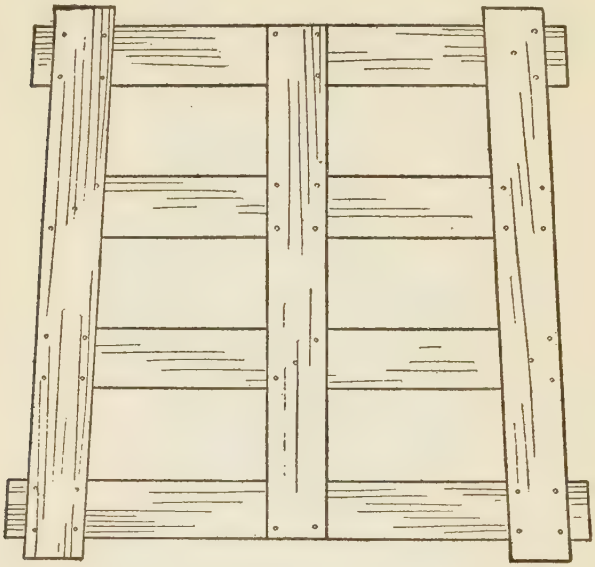


FIG. 227. PLAN OF CHAIR HAT-RACK

The quarter-round molding must be cut accurately to make close-fitting miters at the corners; and it must be placed so as to fasten the wallboard in the exact center of the width of the framework. Pencil lines, measured off carefully, should be used as guide lines. In the same manner, fasten the upper wallboard panel in the framework with two sets of quarter-round.

The Chalk-rail is finished by nailing lattice-strips J to its side edges, setting them so they will project to form ledges, as shown in Figure 224.

The Casters should be large and ball-bearing (Fig. 342, Chapter XIX) so they will roll easily. Fasten them to the runner blocks B near the ends (Figure 224).

Finishing. When the screen has been completed, sandpaper all wood surfaces, and round off sharp edges. The framework can be stained, shellacked and varnished, or stained, shellacked and waxed or painted. The lower wallboard panel will require at least two coats of paint and three coats will be better.

The Blackboard panel must be given one coat of oil-paint then three coats of blackboard slating.

A CHAIR HAT-RACK

This rack does away with the necessity of piling hats upon a chair; but each chair of the class must be provided with a rack, and the class must get their own chairs each week, or every chair in the room will have to be supplied with a rack; otherwise, the scheme will not work.

A rack can be made quickly of laths planed smooth. Figure 226 shows how it rests upon the chair-rounds with its corners fitted against the chair-legs. Figure 227 shows how the laths are crossed and nailed. No measurements are given for the rack, because the shape and size will be determined by the chair it is made for. It should be so con-

structed that when it is slipped into place it will fit tightly against the legs. Fasten it by driving a brad into each chair-leg just above the rack strips.

The Finish of the rack should be as nearly like that of the chair as possible.

Chapter XII

FRAMING PICTURES FOR THE SCHOOL ROOM

Passe Partout Pictures—A Lath Picture-Frame—An Ornate Frame.

We often do without as many pictures as we would like to have because of the cost of framing, and many fine prints are packed away with the hope that some day we can afford to have them framed. While store frames are expensive, home-made frames need cost little more than the price of the glass, and you can make as attractive frames as those you buy, if you will do your work carefully. There is generally a scarcity of pictures in the Sunday school rooms, and this is another instance where you can supply the need with a few hours' work.

PASSE PARTOUT PICTURES

The easiest method of framing is to mount the picture upon cardboard, place the cardboard and glass together, and bind the edges with gummed paper, known as passe partout paper.

The Parts. Figures 228 and 229 show a picture framed somewhat differently. Figure 230 shows the parts. The first piece A is the glass, B is the cardboard mat with a panel opening just large enough to

cover the margins of the picture, C is the picture, D is the cardboard back, and rings E are the hangers. You will notice that two slots are shown in back D. The end slot is provided through which to slip a pic-

Fig. 228

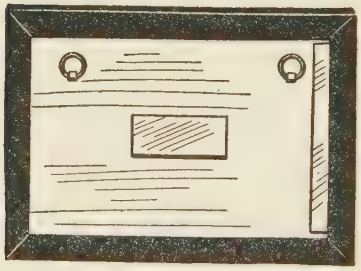


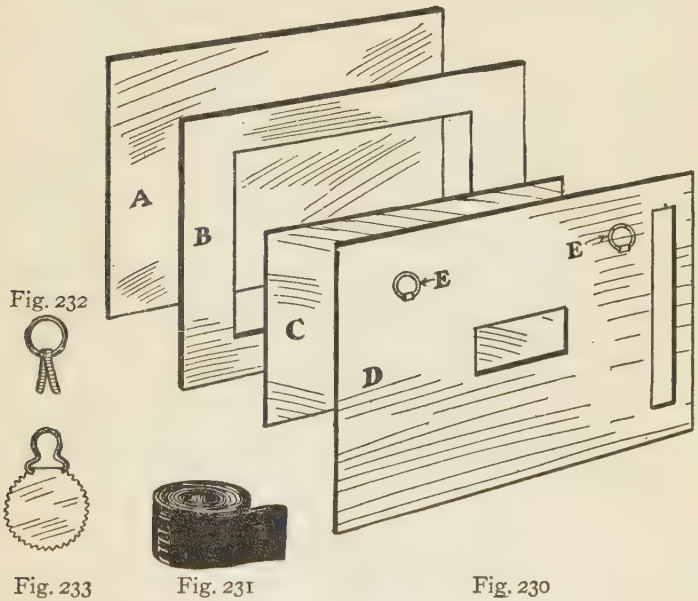
Fig. 229

FIGS. 228 AND 229. FRONT AND BACK OF A SMALL PASSE PARTOUT PICTURE

ture, the center slot to admit your fingers for shifting the picture into position. The slot arrangement makes it possible to remove and replace pictures.

The Glass. You can use camera plates for glass, or, if there happen to be broken pieces of glass about the house, you can take them to a paint store and have them squared up; or, if you have a glass

cutter, you can cut them yourself. You may know a photographer who will give you used camera plates. Small pieces of glass, however, will not cost much at the paint store.



FIGS. 230-233. DETAILS OF THE PASSE PARTOUT FRAME

A Mat. If you can get a piece of photo-mounting board for the mat, it will be best; if not, use white cardboard from a box, or wallboard. You must cut the panel opening with a sharp knife, cut the sides straight, the corners square.

Assembling. With all parts prepared, fasten them together with passe partout paper, or with the gummed tape sold for sealing packages. You can

buy both in rolls (Fig. 231). The paper must be cut into strips, with ends mitered, and the lengths must be measured carefully, so the pieces will join neatly. Moisten the gum on one strip, and lap the strip over one edge of the glass and mat. Make the lap over the glass about ¼ inch wide. Bind the opposite edges with a second strip, and then the intermediate edges, being careful to have the margins equal.

Hangers. Figure 232 shows a ring hanger with a brass fastener that sticks through a hole punched in the picture backing and clinches. Figure 233 shows a gummed hanger made to stick upon the back. If you cannot buy either of these at a stationery store, make hangers out of fancy-work rings and strips of gummed tape.

Picture Material appropriate for the Sunday school room will be found among lithographed and photogravured Bible picture cards and larger Bible pictures.

A LATH PICTURE-FRAME

Figure 234 shows about the simplest wooden frame that you can make. The corners are not mitered, but are butted together. Strips of the width and thickness of laths and lattice-strips are of the right size. Laths left in the rough and stained with shingle stain or other wood stain, make artistic frames. Lattice-strips can be stained and waxed, stained, shellacked and varnished, or enameled.

The Frame Strips. Figure 235 shows how end pieces B fit between top and bottom pieces A, and

how strips C batten the four together. Dimensions are not given, because they will be determined by the size of the picture to be framed. Set strips C ⅜ inch from the inner edge of strips B, and fit strips D between them the same distance from the inner edge of strips A, to form an offset for the glass, picture

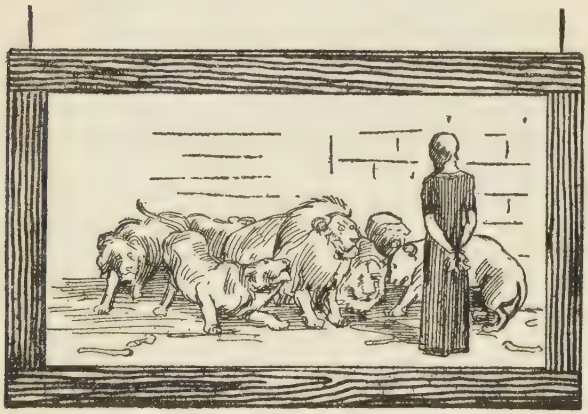


FIG. 234. A LATH OR LATTICE-STRIP FRAME

and backing, corresponding to that of a rabbeted frame. Fasten the strips with glue and brads.

The Frame Backing. Use corrugated cardboard or wallboard for this. Cut it to fit the opening. After the glass and picture have been put in the frame, slip the backing in place, and fasten all by driving brads into the edge of the frame strips C and D. To seal the back, cut strips of gummed paper and lap them over the spaces between the frame and the backing.

Hangers. Screw a screw-eye into strips C or the

back of the frame, one-third of their length down from the top, and fasten picture-wire or heavy cord to the screw-eyes. Hang the frame from two picture-hooks instead of one; it will hang straighter.

AN ORNATE FRAME

The picture-frame shown in the photograph of Figure 236 is almost as easy to make as the one just

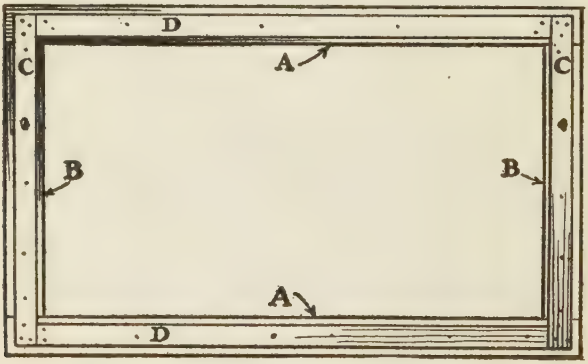


FIG. 235. BACK OF FRAME

described. The only additional work is the cutting of the curved top and bottom members. The frame illustrated is made of oak, but you can use any other kind of wood that is readily worked. Three-eighths inch stock is the right thickness. This is a good type of frame for the 16 by 20 size of lithograph and photogravure prints of Bible pictures handled by most of the Sunday school supply houses.

The Frame Strips. Figure 237 shows a back view of the frame, and Figure 238 shows patterns for

FIG. 236. AN ORNATE FRAME THAT IS EASY TO MAKE

[*Facing page* 162

marking out and cutting the pieces. In laying out the top piece B and the bottom piece C, draw a center-line across each, then lay out one-half of the curve to one side of the line, following the given

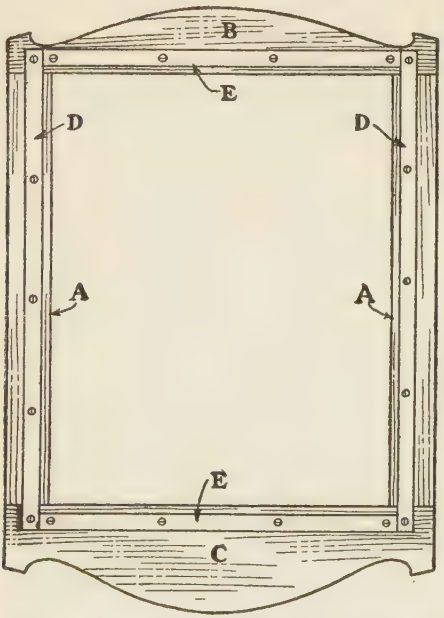


FIG. 237. BACK OF FRAME SHOWN IN PHOTOGRAPH OF FIGURE 236

dimensions. Trace off the half of the curve upon transparent paper, reverse the paper, and transfer the outline upon the other side of the center-line. Use a coping saw or other small saw for cutting the curves. Saw close to the lines, then finish up the edges with a chisel and sandpaper.

Assembling. You will see by Figure 237 how to

assemble the frame, battening the pieces together with the battens D. The battens and a pair of strips set in between their ends (E) provide an offset for the glass, picture and backing, like the rabbet of the

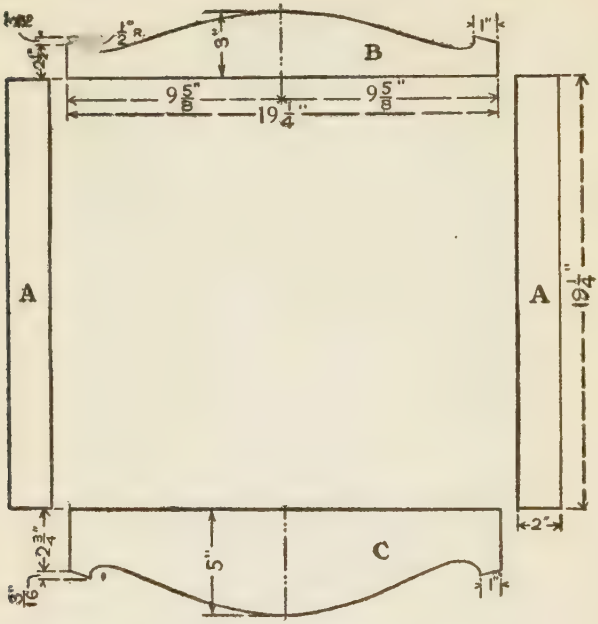


FIG. 238. PATTERNS FOR FRAME STRIPS

regular form of frame. Set strips D and E ⅜ inch from the inner edges of frame strips A, B and C. Fasten them with screws. Great care must be taken to cut the ends of frame strips A square, and to make close joints between them and top and bottom strips B and C. The joints should be glued.

Finishing. You can finish this frame with wood-

stain, paint or enamel. The frame in the photograph was stained gray, then shellacked, then waxed.

Use a piece of wallboard for the backing, and frame the picture, and put on the hanger screw-eyes in the manner previously described.

Chapter XIII

BANNERS, PENNANTS, STAFFS AND BASES

A Staff—A Four-Wing Base—A Base with a Pipe-Fitting Socket—A Small Staff and Base for a Table—A Small Base for a Pennant—A Spool Base—Finishing Staffs and Bases—Perfect Attendance Awards—Banners and Pennants—A Star Banner—A Concrete Base for a Flag—A Round Concrete Base.

Your Sunday school banners, pennants and flags may not have staffs or bases. There is an extra charge for these, and they may have been omitted from the order to reduce the cost. Now, a banner or a pennant makes a good wall ornament, but if it is awarded to your class for perfect attendance or other attainment, you will want it near at hand, on a standard. With a little gumption, and an hour or so of work, you can easily make a staff and base that will serve excellently. Several suggestions for these accessories are presented on this and following pages. You will find most of the material at hand, and what you must buy will be inexpensive.

A STAFF

A round rug-pole or curtain-pole will make a good banner or flagstaff; a brass ball such as is sold for curtain-pole ends will do for the head, and can be

FIG. 239. A RUG-POLE STAFF AND A FOUR-WING BASE

screwed into the end of the pole. A rug-pole is generally rough and must be rubbed smooth with sandpaper before finish is applied. Stain oak or mahogany color, then shellac and varnish it. The regulation length for a staff is 6 feet.

Three-eighths inch gas-pipe and ½-inch water-pipe make good staffs, also. You can plug the upper end with a wooden peg to screw a curtain-pole brass ball into.

A FOUR-WING BASE

A wooden base like that shown in Figure 239 is easy to make. Figure 240 shows a detail of it and Figure 241 a plan, while Figure 242 is a pattern for the wings A. The four wings can be cut out of any wood ⅞ inch thick. By lapping their ends, as shown in Figure 240, all can be cut of equal length. Fasten the pieces together so there will be an opening 1½ inches square at the center for a pocket. Nail the shoe blocks B to the ends, cut cap block C to fit over the center opening, as shown in Figure 241, and bore a hole through its center of the right size for the staff. Bore a hole of the same diameter half way through a similar block, and nail this to the under side of the base, for the bottom of the socket.

A BASE WITH A PIPE-FITTING SOCKET

Another form of home-made base is shown in Figure 243. Cut crosspieces A and B 18 or 20

inches long, and 3 inches wide, out of ⅞-inch stuff, and halve them together at their centers (Fig. 244) —that is, cut away a piece equal to the crosspiece's width and one-half of its thickness, from each piece,

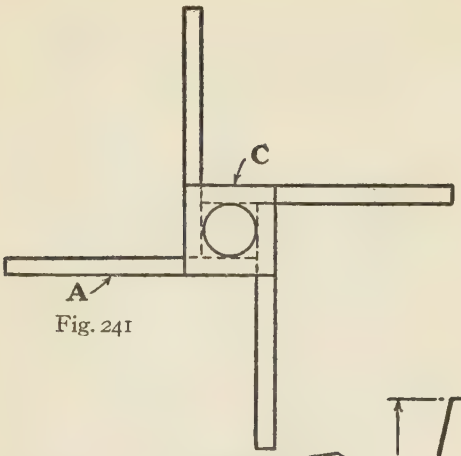


Fig. 241

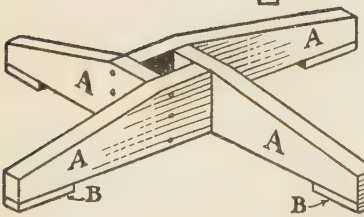


Fig. 240

Fig. 242

FIGS. 240-242. DETAILS OF A FOUR-WING BASE

so that the two will interlock with the surfaces flush. The pieces may be left straight like those of the base shown in Figure 254, or may be tapered from the points at which they interlock, to their ends—as

shown in figure 244. Fasten the shoe blocks C to the base ends as shown in Figure 243.

The staff socket is made of a plumber's iron pipe floor flange (D, Fig. 245), and a pipe nipple to fit

Fig. 246

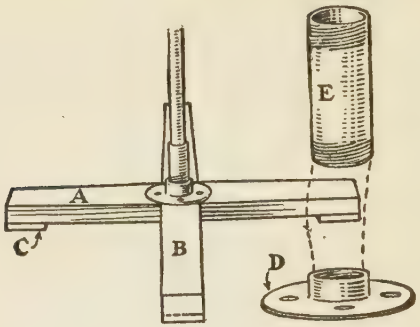


Fig. 243 Fig. 245

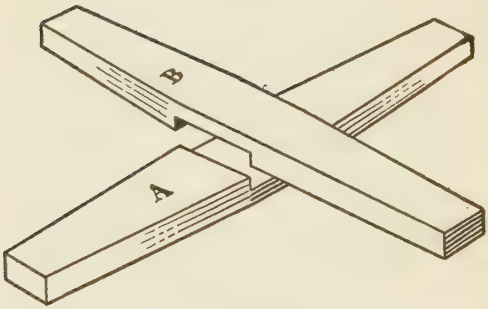


Fig. 244

FIGS. 243-246. DETAILS OF BASE WITH PIPE-FITTING SOCKET

it (E, Fig. 246). You can buy fittings of the right size for the staff you make the base for. Screw the floor flange to the center of the base, then screw the nipple into it.

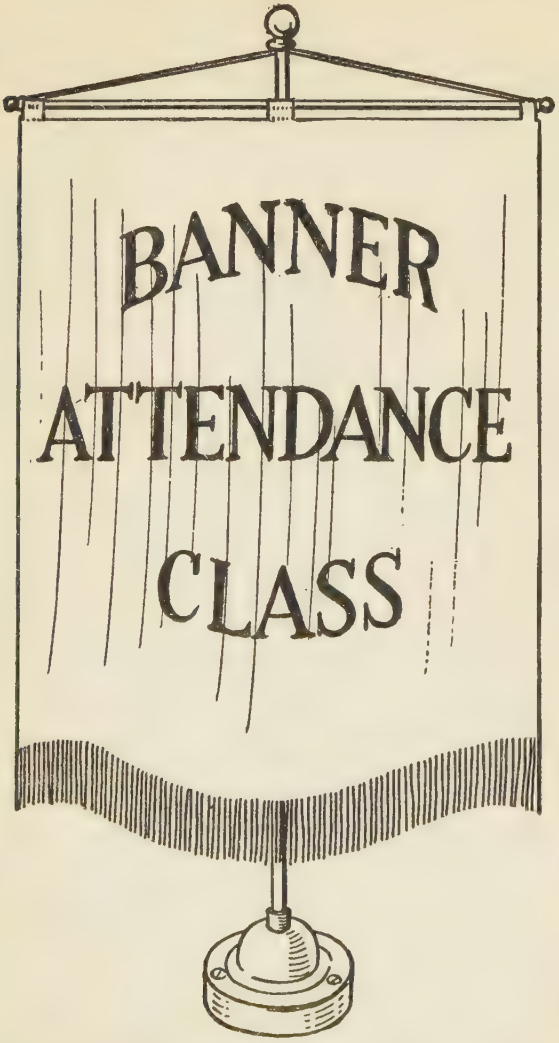


FIG. 247. A STAFF AND BASE FOR A BANNER TO STAND UPON A TABLE OR PEDESTAL

A SMALL STAFF AND BASE FOR A TABLE

Perhaps your class needs a staff and base for a small banner or pennant to stand upon a table or

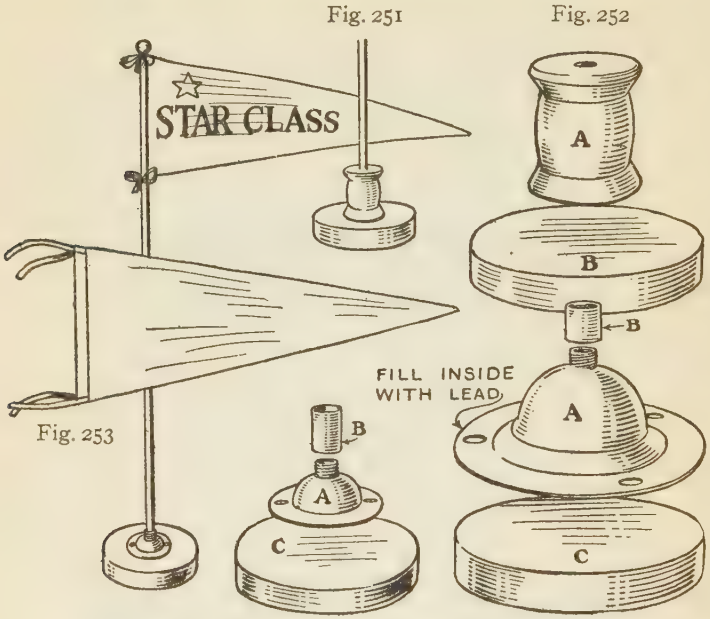


FIG. 248. A BASE MADE OF AN ELECTRIC-LIGHT FIXTURE CANOPY AND A WOODEN BLOCK
FIGS. 249 AND 250. A SMALLER BASE FOR A PENNANT
FIGS. 251 AND 252. A SPOOL BASE FOR A PENNANT
FIG. 253. A PENNANT LIKE THIS IS EASY TO MAKE

pedestal. Figure 247 shows a base made of one of the brass canopy plates sold for electric-light fixtures (A, Fig. 248), a nipple (B), and a wooden block (C) cut of the same diameter as the canopy

plate. To make the base heavy enough so that it will not upset, fill the canopy plate with melted lead. Screw the plate to the wooden block with round-head brass screws.

A piece of gas-pipe can be screwed to the canopy plate for a staff, or you can use a curtain-rod or dowel-stick of the right diameter to fit in the nipple B.

A SMALL BASE FOR A PENNANT

The base shown in Figure 249 is made of a miniature lamp-socket base (A, Fig. 250), a nipple (B), and a wooden block (C). Cut block C larger than the socket base, so the standard will not upset easily.

A SPOOL BASE

Figure 251 shows a base for a small pennant, made of a spool (A, Fig 252) and a wooden block (B).

FINISHING STAFFS AND BASES

The metal and wooden parts of the home-made bases for banners, pennants and flags may be finished with enamel paint, or the brass may be left as it is, and the wooden pieces stained mahogany color. A piece of felt glued to the bottom of the base blocks will prevent their scratching the surfaces they are stood upon.

PERFECT ATTENDANCE AWARDS

Many Sunday schools award a banner or pennant to classes having a perfect attendance and the award is theirs for as long a time as the attendance remains one hundred per cent. A sufficient number of these banners must be on hand to award them to all the classes, should the school at any time report a one hundred percent attendance. If you and the other boys in your class will make the staffs and bases, probably mother, sister, and other ladies in the church will undertake the preparation of the banners.

BANNERS AND PENNANTS

A banner or a pennant can always be secured for a pattern, and it is not difficult to duplicate them. Figure 249 suggests a good way to attach a pennant to a staff. There must be a hem on the edge of the pennant through which to run the staff, and two tapes at the corners to tie around the staff (Fig. 253).

A STAR BANNER

While you must leave the making of cloth banners and pennants to some one else, you can make every part of the star banner shown in Figure 254. This clever form of banner, designed by my friend, Rev. George T. Arnold, has proved a great incentive to regular attendance.

FIG. 254. A STAR BANNER FOR CLASSES HAVING PERFECT ATTENDANCE

The Base may be made like any of the forms described on preceding pages.

The Staff may be a wooden curtain-pole or a piece of iron pipe.

The Star may be cut out of wallboard, but metal will be better material. You can get galvanized iron or copper at any tinshop. Iron will be cheaper than copper, of course, and will be just as satisfactory. If you have tinsnips, cut the star yourself. If you haven't, take a cardboard pattern to a tinshop and have the cutting done.

Laying Out a Star is easy. Describe a circle with a compass, using a radius of 3 inches (a 6-inch star is a good size for a banner); divide the circumference into five equal parts, finding the exact divisor by trial; and join alternate points with straight lines (Fig. 255).

Mount the Star upon a metal rod, slotting the end of the rod, slipping the star into the slot, and soldering it (Fig. 256). This rod can be driven into a hole bored in the end of a wooden staff, or soldered in the end of a pipe staff. Instead of using a metal rod, you can slot the end of a stick (Fig. 257) and fasten the star in the slot. This is the way to fasten a wallboard star.

Finishing. The star must be finished with gold bronze. The staff and base may be enamelled with automobile enamel. Blue is a good color, but several colors may be used, each color designating a certain attainment—for instance, blue representing two Sundays of perfect attendance, red representing perfect attendance for the month, white perfect

Fig. 255

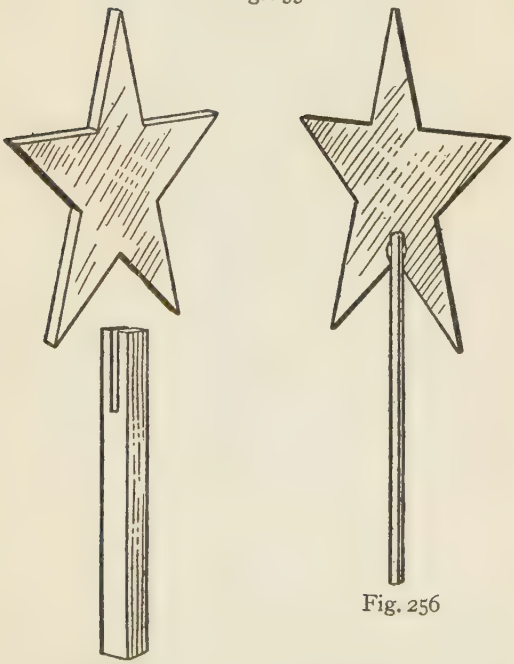


Fig. 256

Fig. 257

FIG. 255. THIS IS THE WAY TO LAY OUT A FIVE-POINTED STAR
FIG. 256. SOLDER A METAL STAR TO A ROD
FIG. 257. FASTEN A WALLBOARD STAR IN THE SLOTTED END OF A STICK

attendance for the year. The sizes of the stars may be varied, also, to indicate the rank of classes. Your minister or superintendent will determine these matters.

A CONCRETE BASE FOR A FLAG

A base cast in concrete makes one of the best supports for a flag or banner that I know of. Figure 258 shows a square base; Figure 259 shows a detail of the block, and Figure 260 shows a detail of the form required to cast it. Eight inches square and 6 inches deep is large enough for the base block. Make the form as shown in Figure 260 and described for making the bird-bath form in Chapter VII. For the flagstaff socket, buy a 6-inch iron pipe nipple of the right diameter for the staff to slip into, and support it in the center of the form while the concrete is being poured, by sticking the staff or another stick of the same diameter into the pipe, and bearing down heavily. Of course, the nipple must not be allowed to slip during the processes of pouring and tamping, and it must be held in a vertical position. Follow the instructions given in Chapter VII for mixing and casting concrete.

A ROUND CONCRETE BASE

The round base with a dome-shaped top, shown in Figure 261, is cast in a kettle like that in Figure 262 with a 6-inch pipe nipple supported in the center.

FIG. 258. A CONCRETE BASE FOR A FLAG OR BANNER

A kettle can be used for the form, and it is best to use an old one, because the rim may interfere with

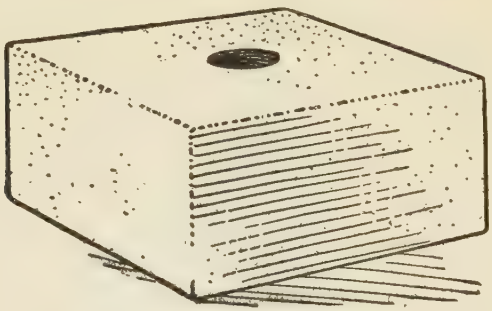


Fig. 259

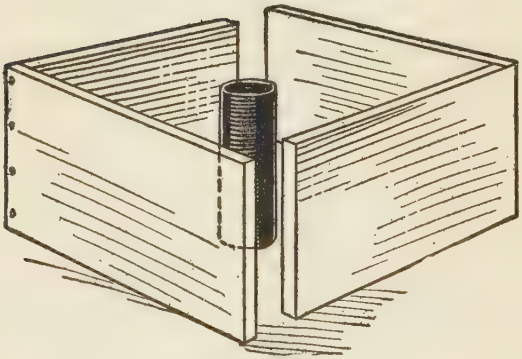


Fig. 260

FIG. 259. A SQUARE CONCRETE BASE
FIG. 260. FORM FOR CASTING A SQUARE BASE

removing the block, in which case it will be necessary to cut it away.

Concrete bases may be painted, but look well when left the natural concrete color.

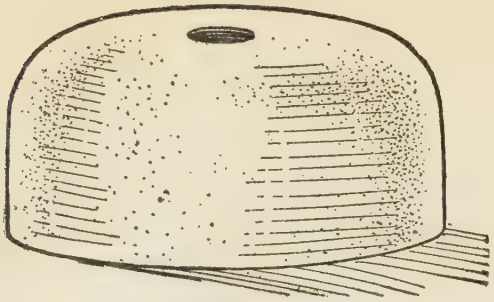


Fig. 261

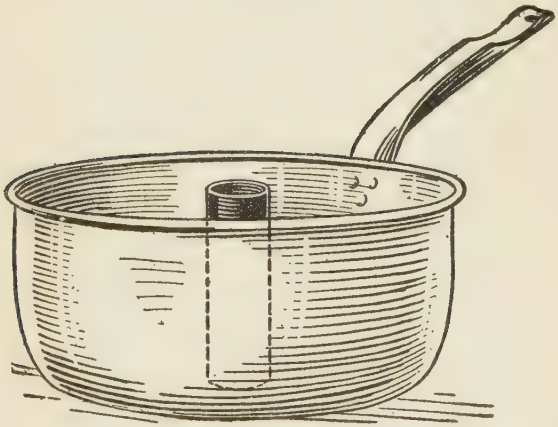


Fig. 262

FIG. 261. A ROUND CONCRETE BASE
FIG. 262. AN OLD KETTLE MAKES A GOOD FORM FOR A ROUND BASE

Chapter XIV

PRINTING FOR THE CHURCH AND SUNDAY SCHOOL

What to Print—Introduction Tags—Attendance Booster Tags—Absent Member Reminders—Novel Invitations to Socials—A Church or Sunday School Paper or Bulletin.

Almost every Sunday school has among its scholars a boy printer. Perhaps you are the lad in your school. If so, there is much of the church and Sunday school printing which you should be able to handle, once you have learned to do presentable work, and I am sure you can land a share of the printing if you approach the party in charge of it. My brother and I rendered such service when we were lads. Regular orders were paid for at about the rates formerly paid other printers, and, as we donated much work, we felt that we could conscientiously accept this payment. We figured that our printing outfit had been bought with hard-earned money, and we needed capital for additional equipment, for one is never done buying new faces of type. The other day in looking over my scrap-book of printing samples, which consist of everything from tickets to a monthly paper, I came across specimens of our church and Sunday school printing and of church printing done on the same press in recent years by other lads. Some of these

samples are included in the group of assorted printing shown in the photograph of Figure 263.

WHAT TO PRINT

The easiest jobs for a small press are tickets, envelopes, letter-heads and tags. These require little type, which makes it easier to get good impressions. But with patient "underlaying" and "overlaying" a lad can produce good "make-ready" even with a chaseful. I remember one program that we turned out that required four impressions, another that was so long that it required two impressions to a page. That was working under difficulties, but was good experience.

Following is a list of printing which a boy should be able to do for his church and Sunday school on a printing press with a chase (frame for type), that measures 4 by 6 inches. Examples are shown in the photograph of Figure 263.

Tickets for entertainments, bazaars, socials and picnics

Introduction tags

"I am Early" tags

Attendance booster tags

Badges

Letter-heads

Envelopes

Weekly offering and special collection coin envelopes

Post-card announcements

Award cards

Absent member reminders
Sick member remembrance cards
Attendance and other record cards
Library cards
Menu cards
Place cards
Programs
Invitations to socials
Dodgers
A church and Sunday school publication

It is not my intention to give instructions in this chapter on how to print, for that has been discussed at length in my book, "The Boy Craftsman"; but rather to give a few suggestions as to what to print.

STOCK

If you are to have the printing of all church and Sunday school tickets, ask the person ordering to use standard sizes, which will make it possible to buy stock cards instead of having them cut, and to buy them in half-thousand or thousand lots instead of a few hundred at a time. Stock sizes can always be purchased more cheaply than you can have cards cut to order.

Stock sizes of cards can be bought for the printing of absent member reminders, sick member remembrance cards, award cards, menu cards, place cards, library cards and record cards.

Coin envelopes and cards can be purchased in

small quantities at the stationery store, but since they can be used in many ways, it will pay to buy them in half-thousand or thousand lots at a paper house.

Stock stationery can be obtained in various sizes and grades, and in large or small quantities.

Post-cards can be used for many purposes, and it is most economical to use them when the exact number required for mailing is known, because of the saving in the cost of stock. Care must be taken not to waste these cards in "making ready" a job of printing. Use other cards, or paper cut post-card size, for striking proofs.

INTRODUCTION TAGS

The "Hello, Friend!" Tag, shown in the photograph of Figure 263, has come into popularity as a novel form of introduction in gatherings where there are strangers. Smaller tags than this with the two lower lines omitted can be substituted.

ATTENDANCE BOOSTER TAGS

The "I am a Booster" Tag, shown in Figure 263, may be used for increasing either class or Sunday school membership.

The "I am Early" Tag (Fig. 263) is generally used in contests of a quarter's or a year's duration. Therefore, enough can be struck off at a time for a quarter or a year. Notice that the tag is dated. The dating is done with a rubber stamp dater. The

person in charge of awarding the tags to early scholars can stamp them as needed, then there will be none wasted. It is customary to give a suitable award to each scholar holding thirteen tags at the end of a quarter, or fifty-two tags at the end of a year.

Rain Checks, unlike those given out at a ball game postponed because of rain, are issued to each scholar attending services on stormy days. And at the end of the year, an award is given to those holding the largest number of checks. A rain check printed upon a round-cornered card is shown in the photograph of Figure 263. Tags can be used instead of cards, if preferred.

ABSENT MEMBER REMINDERS

Numerous forms of reminders and "follow-ups" have been devised for school and class secretaries to send to absent members. From these you can make adaptations to print on your press. The following ideas never fail to bring results.

A Startling Reminder consists of an envelope with a folded letter-paper enclosure, on one side of which is printed "This is to remind you—" and in the folds of which is concealed a metal or cardboard "bug" which buzzes around when released. It is safe to assume that the printed reminder will be read and acted upon.

The folded sheet of letter-paper is shown in the upper left-hand corner of the photograph of Figure 263; and it is shown in Figure 264 with the enclosed

"bug" indicated by dotted lines. Figure 265 shows the unfolded paper with the reminder printed upon it.

Figure 266 shows a cardboard "bug," the rubber band used to make it buzz and the wire frame which

Fig. 264

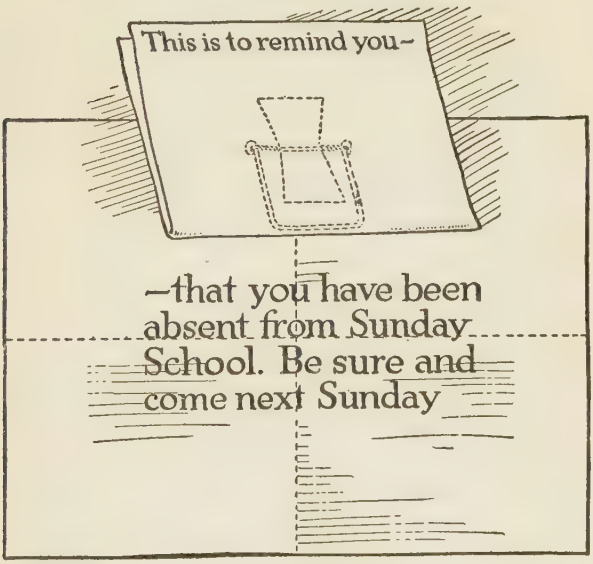


Fig. 265

FIG. 264. A STARTLING REMINDER
FIG. 265. THE SHEET UNFOLDED

supports the rubber band. A pattern for the "bug" is given in Figure 267, and the size of rubber band to use is shown in Figure 268. To set the "bug," turn it over and over until the rubber band is tightly twisted; then hold it, fold it up in the paper, and slip the paper into its envelope.

The Fire-Cracker Report Card at the bottom of the photograph of Figure 263 is a novelty from the house of David C. Cook Publishing Company. The cracker has an outer casing ¼ inch in diameter rolled out of a piece of red paper 2 inches square, (Fig. 269); and its fuse is a piece of cotton string glued in the turned-over edge of a strip of paper 2 inches wide and 4 inches long (Fig. 271), which is rolled up into a tight roll (Fig. 270) and slipped

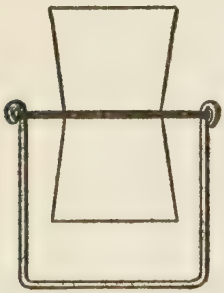


Fig. 266

Fig. 267

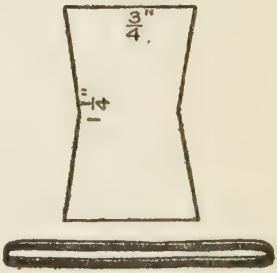


Fig. 268

FIGS. 266-268. DETAILS OF THE "BUG" FOR THE STARTLING REMINDER

into the casing. The wording for the card can be seen in the photograph. This has been printed from a zinc cut engraved from a hand-lettered original. You can set up the wording in type, omitting the arrow lines. The wording for the fuse insert is shown in Figure 271.

NOVEL INVITATIONS TO SOCIALS

A clever invitation to a social seldom fails to bring out a good attendance, and blazes the way for the

FIG. 263. PRINTING FOR THE CHURCH AND SUNDAY SCHOOL THAT CAN BE DONE ON A SMALL PRESS

[*Facing page* 188

evening's fun. There are many methods of preparing invitations. The entertainment committee of your church has used various schemes, no doubt, and knows of other untried ideas. Two novel forms of invitation are the "Stocking Social" invitation, shown in the photograph of Figure 263, and the "Backwards Social" invitation shown in Figure 272.

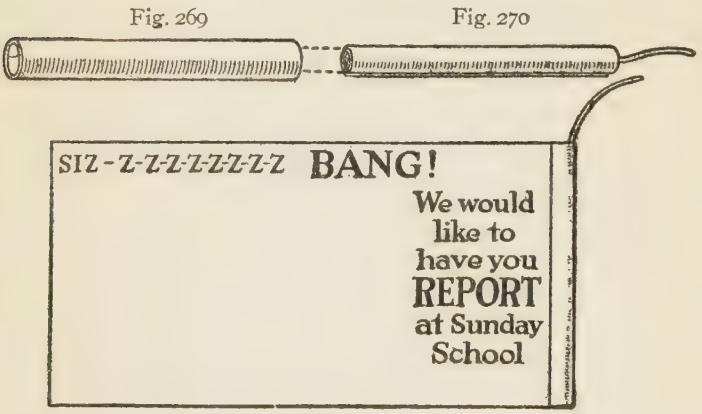


Fig. 271

FIGS. 269-271. DETAILS OF THE CRACKER FOR THE FIRE-CRACKER REPORT CARD SHOWN IN THE PHOTOGRAPH OF FIGURE 263

A Stocking Social offers a successful method of raising a small sum of money. There are several ways to word the invitation, but the following verse on a card, to which is pinned a small cloth sock, is to the point:

DEAR FRIEND:

This little sock we send to you
Is not for you to wear;

Please multiply your size by two
And place therein with care,
In precious nickels, cents and dimes—
We trust you're good at summing—
Your stocking's size increased two times.
Now, help us out by coming—
We'll welcome you with smiling face,
And gladly take your stock.
Remember well the date and place—
And DON'T FORGET YOUR SOCK!

Stocking Social Committee,
Berwyn M. E. Church.

Date, Feb. 5th,
8 o'clock.

Print the verse upon a card of post-card size. The ladies can make the socks. These should be 3½ inches long, and should have a gathering-string in the top of each with which to draw the sock together after it has had the correct number of coins deposited in it.

A Backwards Social, at which everything is done backwards, calls for something unique in invitations. A novel form to set this in is shown in Figure 272. The illustration has been reproduced from an invitation set up by one of the boys of the church and printed on my hand press, on pieces of brown wrapping-paper with edges torn ragged as indicated. You can use your own wording for the invitation, and your own scheme for setting. The illustration suggests how to set the words to read backwards,

how to invert letters, and how to insert capital letters where small letters should be, and vice versa.

A CHURCH OR SUNDAY SCHOOL PAPER OR BULLETIN

A publication for the church or Sunday school offers you a fine opportunity to serve in a big way, and the experience of editing, setting type, making

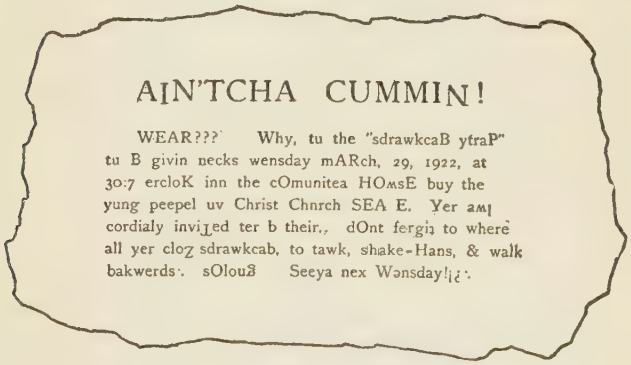

AIN'TCHA CUMMIN!
WEAR??? Why, tu the "sdrawkcaB ytraP" tu B givin necks wensday mARch, 29, 1922, at 30:7 ercloK inn the cOmunitea HOMsE buy the yung peepel uv Christ Chnrch SEA E. Yer aml cordialy invi⅃ed ter b their,, dOnt fergi⅂ to where all yer cloZ sdrawkcab, to tawk, shake-Hans, & walk bakwerds·. sOlouƧ Seeya nex Wənsday!¡¿·.

FIG. 272. AN INVITATION TO A BACKWARDS SOCIAL CAN BE SET UP LIKE THIS

up pages, reading proof, making revisions, printing and distributing the issues will be excellent training.

But the size of the undertaking should be realized at the start; otherwise, as often happens, the publication may be short-lived. This is a proposition that requires time, and lots of it, continuously. It is really more than one boy should attempt. I can speak from experience, since my brother and I published a small paper for three years, when we were lads.

The Staff. Whether the publication be issued weekly, bi-weekly, or monthly, there should be an editorial staff, with an editor-in-chief willing to work and capable of shouldering the entire burden if the others fall down. There should be an advertising manager, if space is to be given over to ads; and closely associated with him should be the circulation manager.

The Printers must be plodders, because the mechanical end of the proposition requires lots of time and patient effort.

Machine Type-Setting is preferable to setting by hand, because of the time it saves, and because each issue will be printed from newly cast type. This will save your investing in many fonts of type for the body of the sheet, and replacing worn type with new. You can have the setting done by a monotype machine, which casts each letter as a unit, or by a linotype machine, which casts all letters of a line in one piece. The latter is the more easily handled because it is in fewer pieces. The type metal can be returned to the type-setting establishment after use, to be remelted and reused. You will find an establishment of this kind in every large city, and in a small town you can have the setting done by the publisher of the town newspaper.

Engraving is expensive, but occasionally you can afford a reproduction made in zinc from a pen-and-ink drawing, or even a copper halftone from a photograph. Stock cuts, of which there are thousands of designs, with something appropriate for every occasion, are inexpensive, and can be purchased

from every type-foundry, or through your local printer. Illustrations make a publication attractive, and are worth the investment, especially if the publication has been placed on a paying basis.

Specimen Papers. The photograph of Figure 263 shows a small eight-page Sunday school monthly publication issued by a boy and his class. This was set and printed by the boy himself. At the head of the illustration is also shown a two-page church paper, the type of which was set on a linotype machine, but the printing done by a boy.

These are matters which should be gone into thoroughly before launching a church or Sunday school publication.

Chapter XV

ATTENDANCE THERMOMETERS AND DIALS

New Member Contests—How to Make an Attendance Thermometer—A Two-Tube Contest Thermometer—An Attendance Dial.

Attendance thermometers have proved one of the best means of stimulating attendance at Sunday school. When they are made large and hung upon the wall in plain sight of all the school, they never fail to attract attention. Every one becomes interested in the rise of the "mercury," and with united effort the school's attendance mounts at a gratifying rate.

NEW MEMBER CONTESTS

A new member contest increases interest in the thermometer recorder. For such a contest two thermometers are needed. The school is divided into two teams of an equal number of scholars, generally known as "blues" and "reds," or other colors, and with the thermometer readings set to indicate the strength of each team, the weekly increase in team membership is shown by a "rise of the mercury" in each "tube."

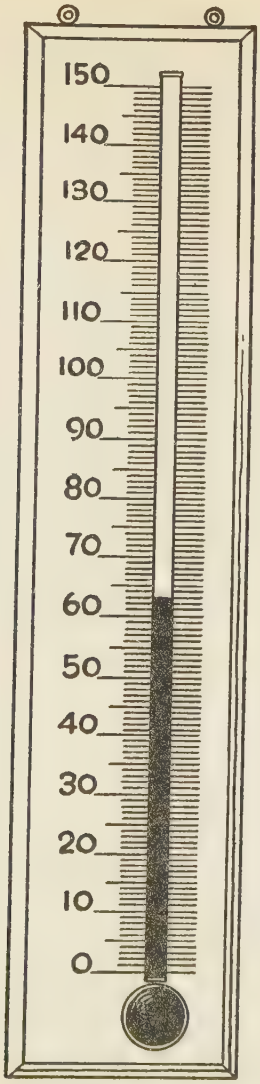


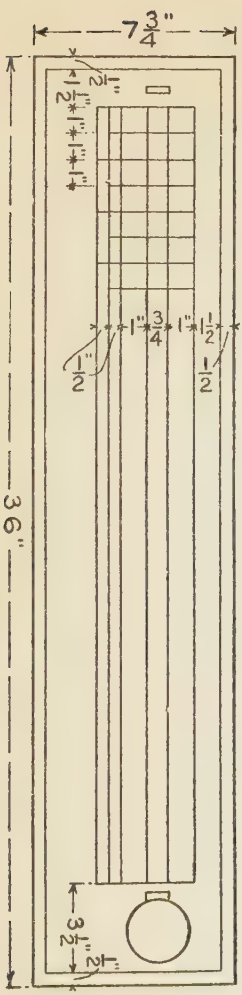
FIG. 273. AN ATTENDANCE THERMOMETER

HOW TO MAKE AN ATTENDANCE THERMOMETER

You can easily make a substantial thermometer board in an evening, and the time will be well invested because the thermometer will be much used and will last indefinitely. Figure 273 shows a board with a single "tube" mounted on an 8-inch board 36 inches long with edges beveled with a plane. When you have planed the board, give it a couple of coats of white enamel.

Laying Out the Board with vertical and horizontal lines is the next operation (Fig. 274). Rule the lines with a soft pencil and straight edge. Continue the 1-inch divisions marked off at the top, for the full height of the column. Then divide each 1-inch division into five. Each of the small divisions is to represent a scholar. Number them as shown in Figure 273. Go over the lines and numbers with black paint.

The "Mercury" Column is indicated by two pieces of tape, one white, the other red or blue (or whatever color the team has chosen, if there is to be a contest). These tapes should be ¾ inch in width. Sew an end of one tape to an end of the other and sew a piece of elastic to one of the other ends (Fig. 275). Then cut a narrow slot through the board above the head of the "mercury" column (Figs. 273 and 274), and another below the foot of the column, slip the joined tapes through the slots, bring the ends together (Fig. 276), pull taut and sew. To cause the mercury to rise in the tube, pull the


7 3/4"
1/2"
1/2"
1"
1"
1

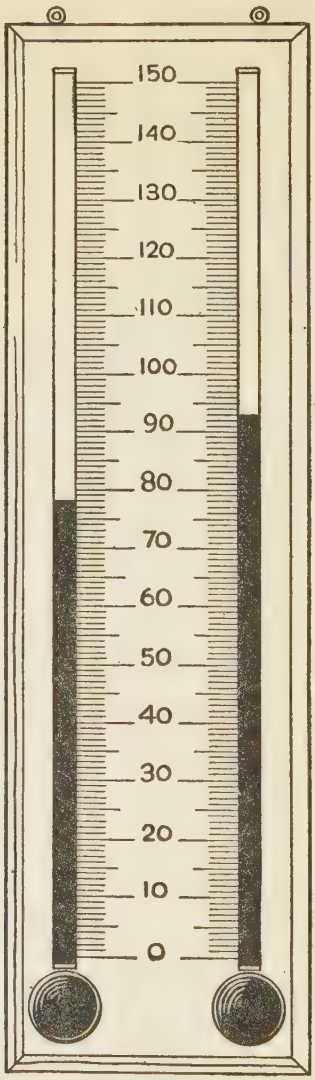


FIG. 278. A TWO-TUBE CONTEST THERMOMETER

colored tape up on the front of the board, and the white tape down on the back.

The Bulb at the foot of the column is a half of a large rubber ball (Fig. 277). Paint it the color of

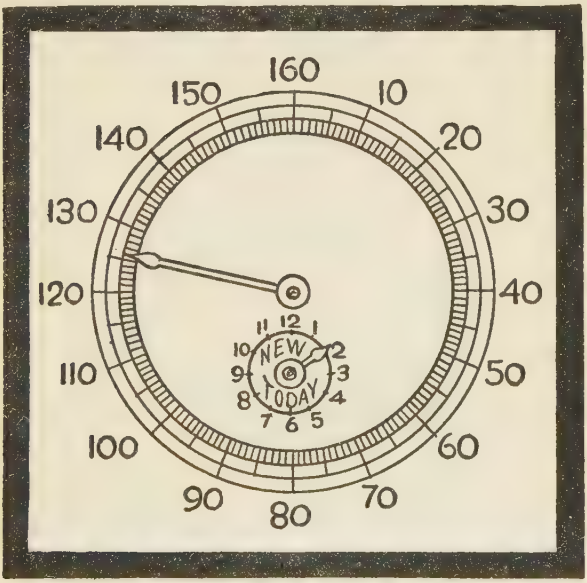


FIG. 279. AN ATTENDANCE DIAL

the red or blue tape, and fasten it to the board with glue or rubber cement.

Hangers. A pair of screw-eyes screwed into the top of the board will do for hangers.

A TWO-TUBE CONTEST THERMOMETER

For a two-team thermometer use a board 11½ inches wide, and lay it out as shown in Figure 278,

with two "tubes"—one of red and white tape, the other of blue and white tape. The construction will be similar to that of the one "tube" board.

AN ATTENDANCE DIAL

Some Sunday school leaders prefer the dial method shown in Figure 279 for recording progress

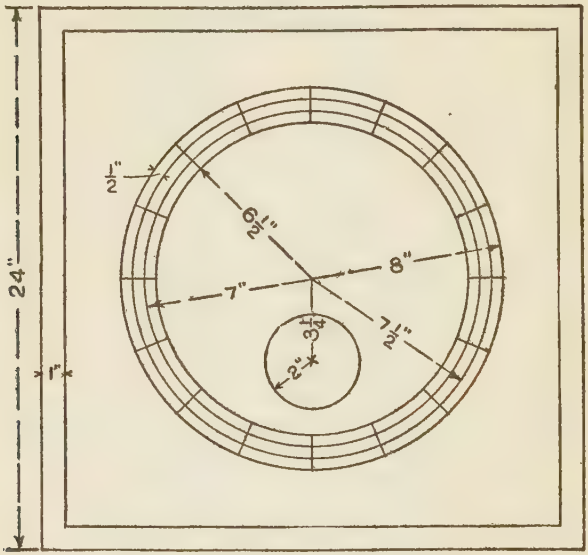


FIG. 280. PATTERN FOR WALLBOARD DIAL

in membership drives. On this dial, in reality, a double dial, a large hand indicates the present membership of the school, a small hand indicates the weekly gain. A pair of large hands and a pair of small ones, of the team's colors, can be provided, if the dial is to be used in a contest.

The Dial Back should be made of wallboard because it should be at least 24 inches square. To keep the wallboard from warping, tack it to a frame made of laths or other small strips.

The Graduations. The diagram of Figure 280 shows how to lay out the circles for the graduations. A strip of cardboard with holes punched in it, one

Fig. 281

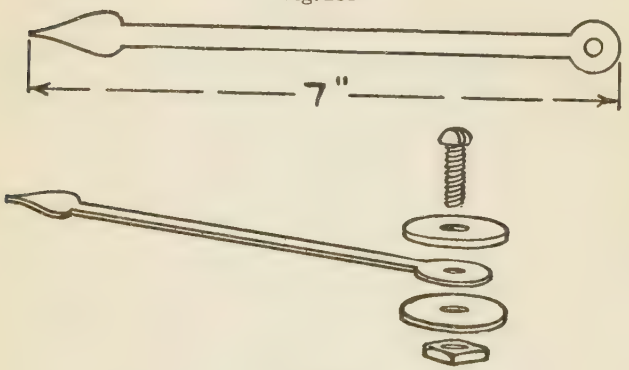


Fig. 282

FIGS. 281 AND 282. DETAILS OF HAND FOR DIAL

for a pin center, the others to slip your pencil through, makes a good compass for describing the circles. Divide the circles into sixteen equal parts (Fig. 280), then divide each of the sixteen parts into two parts (Fig. 279), and each of these into five parts. This will provide for a membership attainment of one hundred and sixty. For a higher goal make a larger number of divisions.

The Large Hand can be made of a piece of tin cut

from a can, a piece of galvanized iron, copper, or other metal. Figure 281 shows a pattern.

The Small Hand can be cut out of metal, also, or you can use a hand from a broken alarm clock.

Fasten the hands to the dials with stove bolts, placing washers beneath the heads and nuts (Fig. 282); or fasten them with round-head screws, placing a small block of wood behind the wallboard to drive them into.

Finishing. The wallboard can be enameled white, or any color. Put on the graduations and lettering with black paint, and paint a border around the outside, or finish the edges with strips of passe partout paper.

Chapter XVI

BANKS AND CONTRIBUTION BOXES

A Mite Box—A Contribution Box—A Large Contribution Box.

Home-made banks may be provided for class use, in the Sunday school room, and one at home will encourage thrift. As they can be made of material at hand, the money that would have gone toward the purchase of banks can be deposited therein.

A MITE BOX

The cross-shaped cardboard bank shown in Figure 283 presents a good problem in laying out, cutting and folding. Make it of box cardboard.

Marking Out the Parts. Figures 284 and 285 show how to lay out the pieces required. As all measurements are 2 inches, you will find this work easy to do with a pencil and ruler. Care must be taken, of course, to make all corners right angles.

Folding. After you have marked out and cut one piece like that shown in Figure 284, and two pieces like that shown in Figure 285, fold the former piece along the dotted lines, lapping and gluing the first and fifth folds, as shown in Figure 287. Glue the slotted end of the folded pieces; and fasten the other with pieces of gummed tape, as indicated, to provide for opening the bank. The ears bent out on two opposite sides are provided to fasten the two hori-

zontal extensions of the cross to (Fig. 286). Fold these cube-shaped end boxes out of the pieces cut by the pattern of Figure 285.

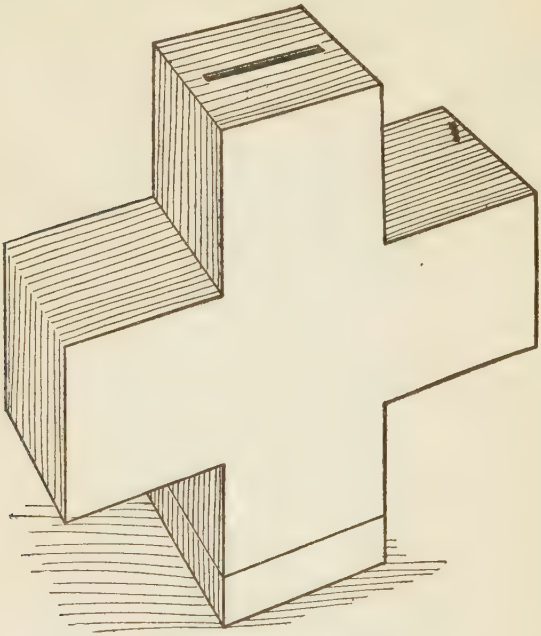


FIG. 283. A MITE BOX

Cover the sides of the cardboard box with red paper, or use white paper and paint it red with water-colors.

A CONTRIBUTION BOX

A Small Contribution Box like that shown in Figures 288 and 289 can be fastened to a wall. While so fastened it cannot be opened.

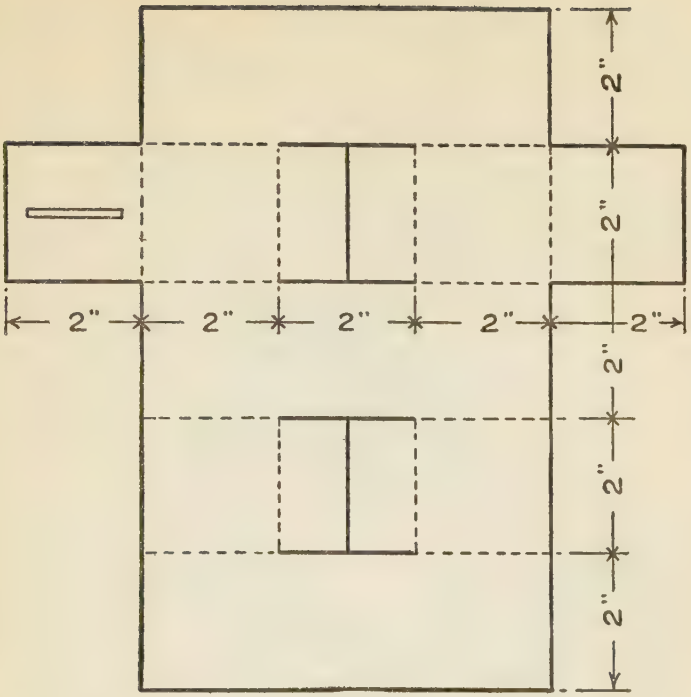


Fig. 284

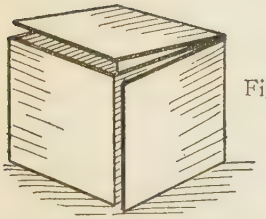


Fig. 286

Fig. 285

FIGS. 284 AND 285. PATTERNS FOR CUTTING AND FOLDING CARDBOARD FOR MITE BOX

FIG. 286. A FOLDED END OF THE CROSS-SHAPED BOX

The Can for the Money Receptacle of the model illustrated was a 1-lb. size fish can that measured 2 inches deep and 3 ⅜ inches in diameter.

The Top and Base Blocks (A, Fig. 290), and the vertical bars (B, Fig. 291) are of the correct dimensions for a can of the above given dimen-

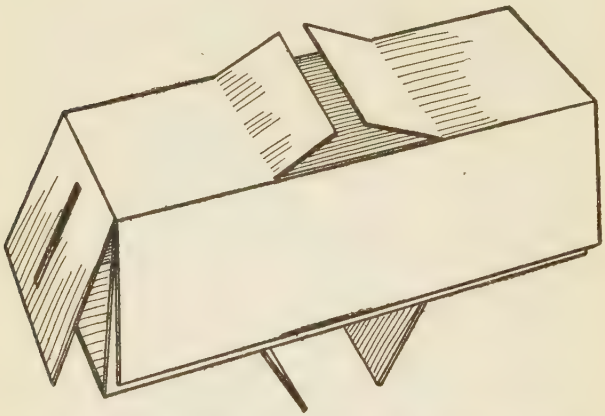
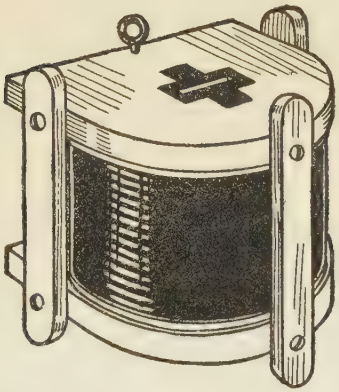


FIG. 287. THIS FOLDED PIECE FORMS THE CENTER AND TWO ENDS OF THE CROSS-SHAPED BOX

sions. If the can you use is of a different size, alter the dimensions for the blocks and bars to suit. Make blocks A ⅜ inch thick, bars B ¼ inch thick. Cut off the front corners of blocks A with a saw and a chisel, and trim up the edge to a perfect semicircle. Smooth all surfaces with sandpaper. Bore a row of gimlet holes along the center of the top block, for the money slot, and connect the holes with a chisel or small saw. This slot should be just large enough to admit a fifty-cent piece.

Fig. 288



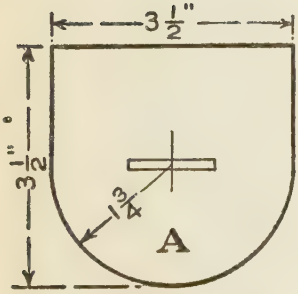


Fig. 290

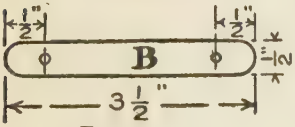


Fig. 291

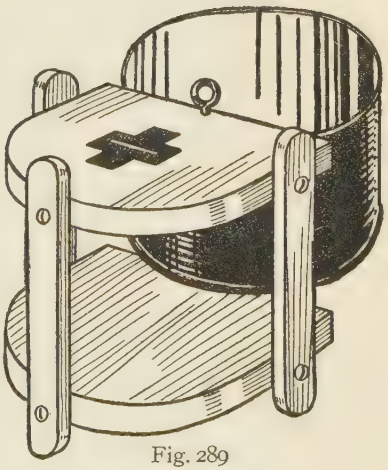


Fig. 289

FIGS 288 AND 289. A SMALL CONTRIBUTION BOX
FIGS. 290 AND 291. PATTERNS FOR WOODEN PARTS

Assembling. Bore screw holes through bars B where indicated. Fasten the strips to the top and base blocks in the positions shown, with round-head screws. The tin can will slip into the back of the framework, as shown in Figure 289. Screw a screw-

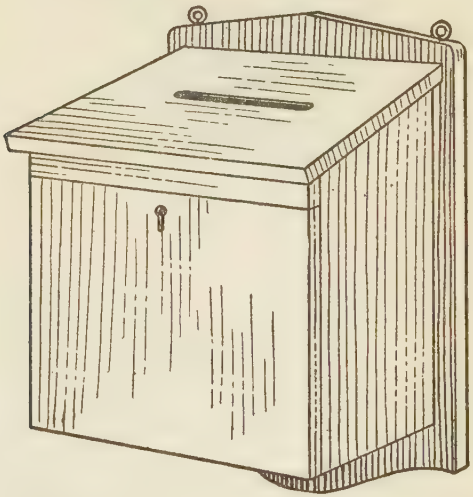


FIG. 292. A LARGE CONTRIBUTION BOX

eye into the top block so that its point will come inside of the top rim of the can; also, drive a screw-eye through the base block in a corresponding position, so that its point will come inside of the bottom rim. These screw-eyes form hangers by which to hang the bank upon the wall, and their projecting points prevent the can from pulling entirely out of the framework, when the bank is removed for emptying.

Paint the bank two coats. I would suggest red enamel for the tin can receptacle, and gray for the top, base and bars, with a small red cross added to the center of the top.

A LARGE CONTRIBUTION BOX

The box shown in Figure 292 may be used for contributions to a fund, for special collections, to deposit tickets in at entertainments and for a ballot-box for church, school, or class elections.

The Material for the box can be obtained from grocery boxes, so need cost nothing. Select a box or two made of soft wood with straight grain, and, after knocking the boards apart, pick out only the best pieces. One-quarter inch is thick enough, but if the boards run a little thicker they can be used just as well.

The Parts are shown in the patterns of Figures 293 to 298. Piece A is the back, B is the side, C is the bottom, D is the door on the front, E is the strip above the door, and F is the top. Mark them out carefully, following the given dimensions. To get the ends of the back board symmetrical, it is best to draw a center-line, and lay off the measurements on one side of it, then trace off the outline upon thin paper, reverse the paper, and transfer the lines upon the opposite side of the center-line.

Cut the square parts with a sharp cross-cut saw, the irregular ends of the back board with a coping-saw or other small saw. Great care must be taken not to splinter the edges of the pieces when sawing.

The way to prevent this is to back up the piece you are sawing with another piece of wood, and then saw through the two. When all of the pieces

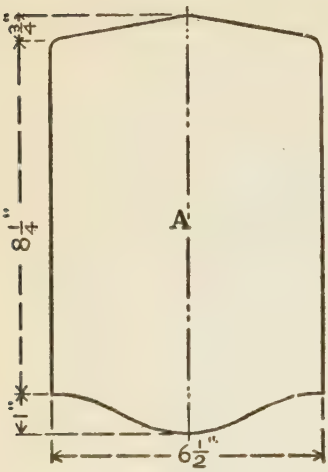


Fig. 293

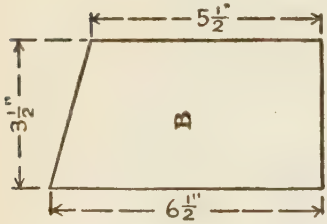


Fig. 294

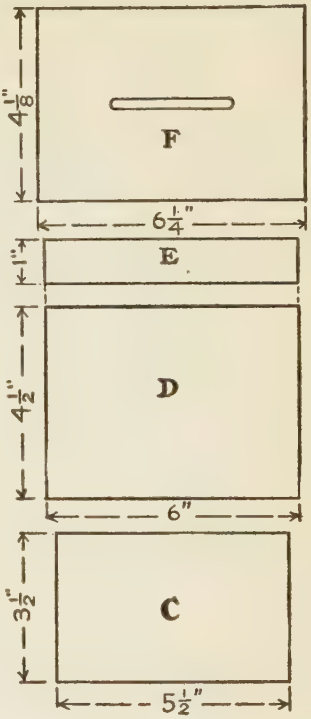


Fig. 298

Fig. 297

Fig. 296

Fig. 295

FIGS. 293-298. PATTERNS FOR PARTS OF THE LARGE CONTRIBUTION BOX

required have been cut, sandpaper them, being careful to round off only those edges which do not join with other surfaces. Cut the coin slot ¼ inch wide and 3 inches long, boring a row of holes, then cutting

out the wood between the holes with a chisel or knife.

Assemble the Parts with glue or brads. Fasten the bottom and side pieces together, first, then the back to their edges. Next, hinge the front board to the front edge of the bottom board, letting the hinges into the pieces as shown in Figure 299, and fasten strip E above it. Buy a cupboard half-mortise lock at the hardware store (Fig. 300), fasten it to

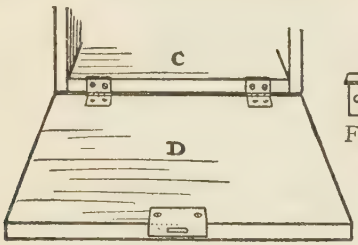


Fig. 299

Fig. 300

FIG. 299. ATTACH THE HINGES AND LOCK LIKE THIS
FIG. 300. USE A HALF-MORTISE LOCK

the inside of the door, as shown in Figure 299, and cut a slot in the lower edge of strip E for a latch-pocket. Use a sharp chisel for the cutting.

The Finish for the contribution box may be such as you select or are directed to use. A coat of flat paint and two coats of enamel are probably best suited to the purpose, but you can use a stain made of oil paint thinned with turpentine, or a purchased wood stain, if the surfaces will take it nicely.

Screw a pair of screw-eyes into the top edge of the back board for hangers.

Chapter XVII

BULLETIN BOARDS

A Bulletin Board on Posts—A Portable Bulletin Board—An Indoor Bulletin Board—A Bulletin Board with a Glass Front.

Nowadays we seldom see the once familiar "A" type of church bulletin board, made of two wide boards placed with tops together and bottoms spread, and braced with strips nailed across their edges. Occasionally we find one outside a tent tabernacle, but of course, the temporary nature of tent meetings warrants the use of a board quickly knocked together. There is little excuse for not having better permanent equipment, because the cost of the material for a well-designed board is small and you or any other boy of the church or Sunday school can do the work.

A BULLETIN BOARD ON POSTS

The board with a canopy top, shown in the frontispiece photograph of Figure 301 and the detail of Figure 302 is of dignified design, and practical for a permanent position on the church lawn or parkway. The board in the photograph is big enough for all purposes. Its dimensions are shown in the elevation and cross-section working-drawings of

Figures 303 and 304; but these need not be adhered to. Some boards are made narrower. This is a matter for your minister to decide.

The Best Material for an outdoor bulletin board is cypress, often spoken of as the "wood eternal,"

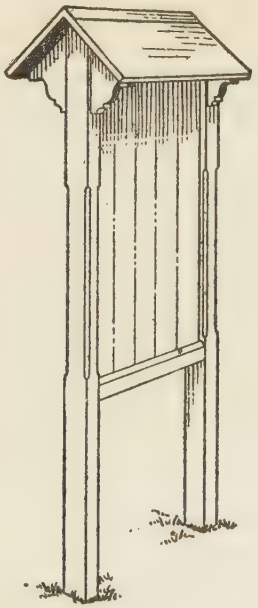


FIG. 302. A BULLETIN BOARD SET UP ON POSTS. (SEE FRONTISPIECE, FIGURE 301)

because of its great resistance to decay. This is an easily worked wood, and it takes stain readily. In making out your material bill, specify that the pieces ordered shall be selected, free from knots and cracks, and "S-4-S" (which means surfaced-four-sides). Notice that the corner posts A are 4-by-4s. Their

length above ground is shown as 6 feet 2 inches, but they must be at least 8 feet long, so that not less than 20 inches of their lower ends can be set into the ground (36 inches would be better). Rails B

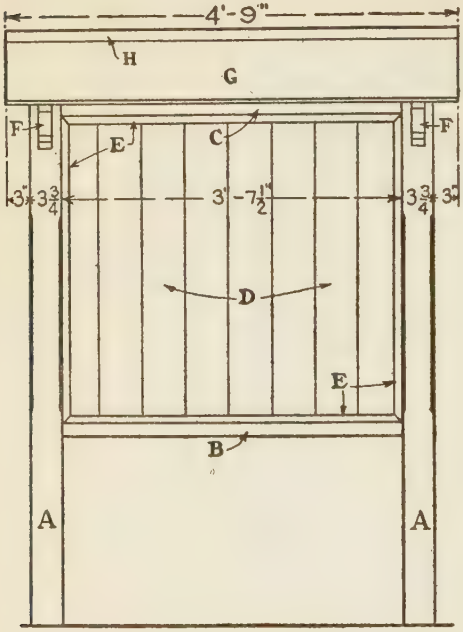


Fig. 303

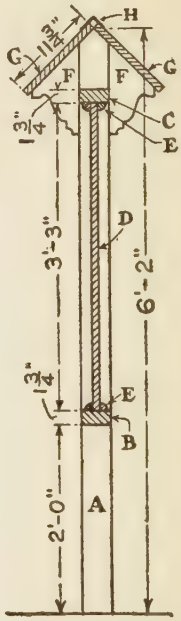


Fig. 304

FIG. 303. FRONT ELEVATION OF BULLETIN BOARD
FIG. 304. CROSS-SECTION OF BULLETIN BOARD

and C are 2-by-4s, panel boards D are 1-by-6 matched flooring, molding strips E are quarter-rounds, brackets F are cut out of a piece of 2-by-6, roof boards G are 12-inch boards, and ridge piece H is a strip of galvanized iron or copper.

The Corner Posts must have their tops cut off as shown in the detail of Figure 305, to fit the peak of the canopy. Mark off the lines to saw on exactly at an angle of 45 degrees, so the peak will be a right angle. The posts of the board illustrated have stop-chamfers cut on their edges (Fig. 305). This is for ornamentation. The cutting should be done with a chisel and a plane.

FIG. 305. DETAIL OF CORNER POSTS

The Rails and Panel Boards should be cut next. Their lengths are shown in Figures 303 and 304. The groove of the first board of the panel, and a strip including the tongue of the last board, will have to be ripped off. The width of the last board can be determined best after all of the boards but this have been nailed in place.

Assembling the bulletin board is a simple job of nailing. First, mark off the positions for the ends of rails B and C on the inner face of posts A. Then toe-nail the rail ends to the posts with 20-penny

finishing-nails. This is best done with the members laid flat upon the ground. Next, frame one side of the panel opening with quarter-round strips (E), mitering the strip ends so they will join neatly. Guide-lines must be measured off and drawn, to locate the strips correctly in respect to the thickness of the posts. With the quarter-round molding nailed around one side of the opening, nail the panel

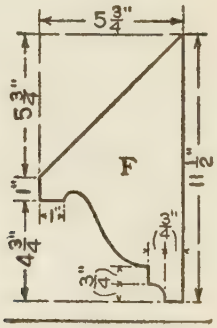


FIG. 306. PATTERN FOR CANOPY BRACKETS

boards in place. Drive the boards close together, and toe-nail through their ends into rails B and C. When the panel boards have been nailed, fit and nail the second set of quarter-round strips to them (Fig. 304).

The Canopy is supported by the post ends and the four brackets (F). Cut the brackets out of 2-by-6-inch stuff, laying them out by the pattern of Figure 306. The slope of the top of the brackets must be exactly the same as the slope of the post ends. It will be the same if you mark it as shown and saw

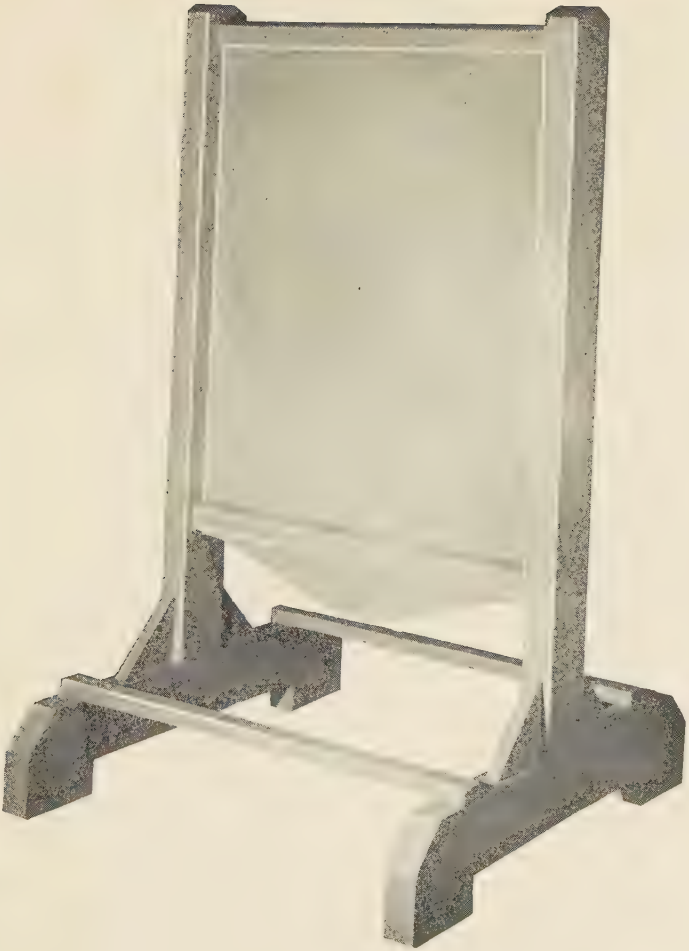


FIG. 307. A PORTABLE BULLETIN BOARD

[*Facing page* 216

accurately. Toe-nail a pair of the brackets to the center of the opposite faces of each post, as shown.

The roof boards (G) are cut from a 12-inch board, which will measure about 11¾ inches wide. Cut them 4 feet 9 inches long (Fig. 303). Nail or screw them to the posts and brackets. With the boards in place, get a strip of galvanized iron or copper 5 inches wide, bend it to fit the ridge, and nail it to the roof boards with shingle nails.

Finishing. You can finish the bulletin board before or after setting it up. The best kind of finish for a board made of cypress is a creosote shingle-stain. You can buy a small quantity of whatever color is desired at most paint-stores. Directions for applying will accompany the stain.

Of course, you can paint the board, if paint is preferred. Two coats will be necessary, and three will make a better job.

Erecting the Board. You can set the corner posts of the bulletin board in holes, drilled with a post-hole auger, or dug; but they will be firmer if set in concrete, and this is the way I would advise you to set them if you can get the material. It will take only a little concrete for the purpose, and possibly you can buy what you need from a builder in the neighborhood. For concrete footings you can drill holes to the required depth (about 30 inches) with a post-hole auger; then enlarge the diameter with a spade. If you have allowed a length of only 20 inches to set into the ground, you can dig holes 30 inches or so deep, and fill them with concrete to the 20 inch depth, for a footing. When these footings have set, stand

the post ends upon them, fill in around them with concrete, and tamp it down.

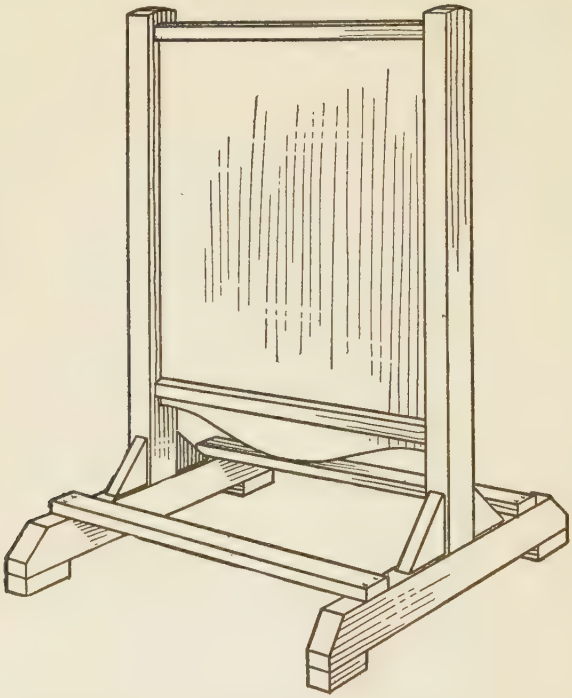


FIG. 308. DETAIL OF PORTABLE BULLETIN-BOARD SHOWN IN PHOTOGRAPH OF FIGURE 307

A PORTABLE BULLETIN BOARD

Sometimes a portable board meets the requirements better than the stationary type just described. It can be stood upon the sidewalk, upon a terrace, or the lawn. The photograph of Figure 307 shows a good form of portable bulletin board, the making

of which will be a good problem in carpentry for a boy. Figure 308 is a detail of the same board. Figure 309 is a cross-section, and Figures 310 to 316 are diagrams of the parts.

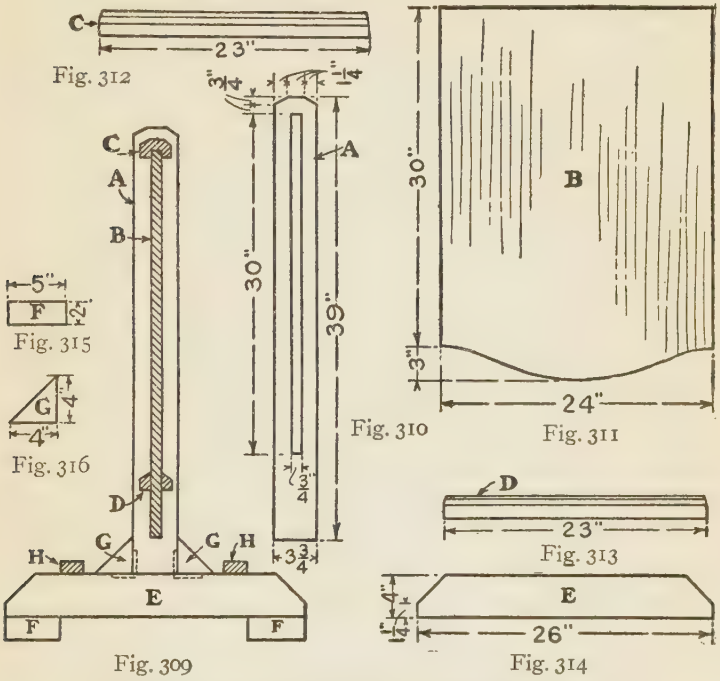


FIG. 309. CROSS-SECTION OF PORTABLE BULLETIN BOARD
FIGS. 310-316. DETAILS OF PARTS

Use Cypress for this board, if you make one, because of its durability and the ease with which it can be worked. Posts A (Fig. 309) and runners E are pieces of 2-by-4. Board B can be made up of matched pieces, like the panel of the larger bulletin board shown in Figure 302, but it will be better to

go to a mill and have a piece of single width glued up. Have the mill-man let a strip of wood into the joint to reënforce the gluing.

Preparing the Parts. Figure 310 gives dimensions for uprights A, Figure 314 for runners E, and Figure 311 for the panel board. The inside face of posts A must be grooved to receive the edge of the panel. Cut the groove of the size shown in Figure 310, ½ inch deep, cutting it with a ¾-inch chisel. Cap block C (Fig. 312), must be grooved also to fit over the top of the board (Fig. 309). Cut strips D (Fig. 313) to fit against the sides of the panel, between posts A (Fig. 309).

Assembling. Posts A can be fastened to runners E with mortise-and-tenon joints, or simply with long lag-screws driven through the runners into the post ends. For reënforcement, fasten iron braces in the angles formed by posts A and runners E (see dotted lines in Fig. 309), and conceal the braces with the wooden brackets G (Fig. 316). Nail shoe-blocks F (Fig. 315), to the runner ends. Fit these carefully, making them of the right width so their surfaces will be flush with those of the runners. When all parts have been securely nailed and screwed, join the runners with crosspieces H, making these of 1-by-2 inch stuff cut of the required length.

Finish the Bulletin Board with stain or paint, after carefully sandpapering all surfaces. If you stain the wood, putty all nailholes with putty colored to match the stain, before applying the stain. If you do a paint job, putty after the first coat has dried, for it will hold better then.

AN INDOOR BULLETIN BOARD

A good board for the posting of bulletins indoors can be made of wallboard. To keep the wallboard from warping, tack it to three lath battens, one

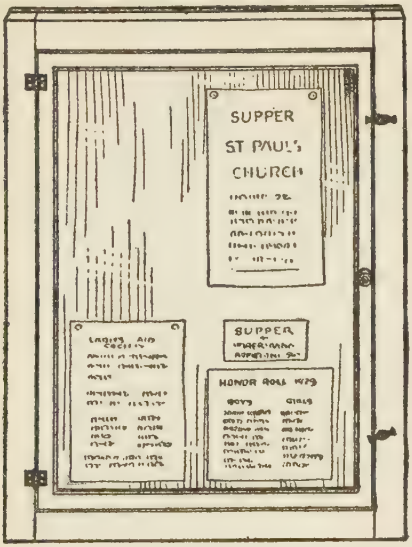


FIG. 317. AN INDOOR BULLETIN BOARD WITH GLASS FRONT

placed across the bottom, another across the top, and a third across the center, on the back.

A BULLETIN BOARD WITH A GLASS FRONT

A more elaborate form of bulletin board is shown in Figure 317. Instead of placing battens on the wallboard, a frame is made and the wallboard is

tacked to it. Then a second glazed frame of the right size to fit inside is hinged to it. This inner frame prevents notices from blowing away or from being tampered with.

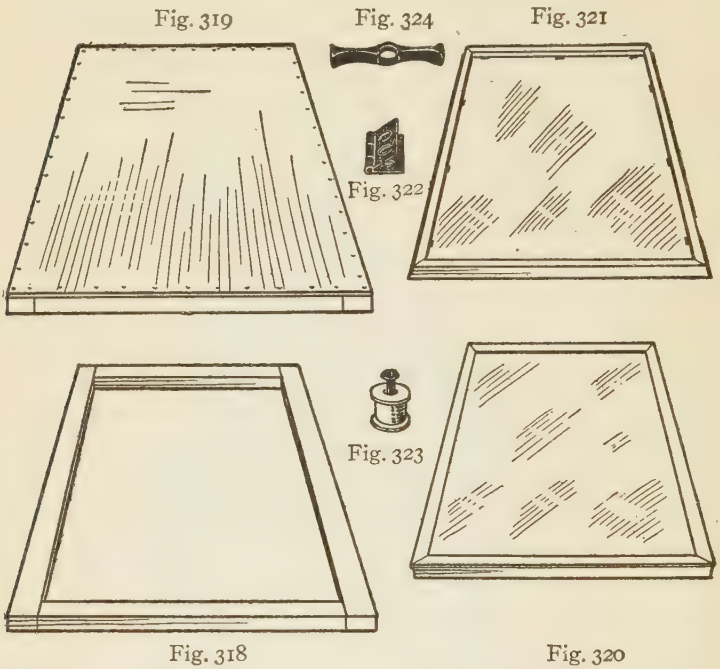


FIG. 318. FRONT OF OUTER FRAME OF BULLETIN-BOARD
FIG. 319. FRAME WITH WALLBOARD BACKING
FIGS. 320 AND 321. THE INNER FRAME
FIGS. 322-324. HINGE, KNOB AND BUTTON FOR INNER FRAME

The Inner Frame may be a picture-frame of plain molding ¾ or 1 inch wide. If you cannot find one at home, buy one at a department store or a paint store, or get the molding and make one. A frame

with a 16 by 20 inch opening is a good size to use.

The Outer Frame must be made to suit the inner picture-frame. If you cannot get the same kind of wood, you can stain other wood so that it will look very much like it, or you can enamel both frames.

The corners of the outer frame can be mitered, but it will be easier to make butt-joints as shown in Figure 318. In cutting the pieces, make them long enough so there will be a clearance of ⅛ inch on all sides of the picture-frame; this is important. Tack the wallboard backing to the frame in the manner shown in Figure 319. If you wish to face the board with felt, glue the material to the wallboard before tacking this to the frame.

Assembling. Hinge the picture-frame to the outer frame with a pair of small brass hinges (Fig. 322). Fasten a knob made of a silk-twist spool (Fig. 323) to the picture-frame with a round-head screw, and screw a pair of metal buttons (Fig. 324) to the outer frame.

Chapter XVIII

BLACKBOARDS AND AN EASEL

A Wallboard and Lath Blackboard—A Blackboard and Bulletin Board—An Easel for Blackboards and Maps.

How about an extra blackboard for the Sunday school room—a small one, a large one, or an easel for a blackboard or maps? If the school room is provided with screens, the best plan is to build a blackboard into each side of them as the class screen shown in Figure 222, Chapter XI, is made. There may be need of additional boards, however, so I am presenting plans in this chapter.

A WALLBOARD AND LATH BLACKBOARD

The blackboard in Figure 325 measures 36 by 48 inches, but the size is something for your Sunday school teacher or superintendent to decide. The writing surface is wallboard, which can be purchased in 32-inch and 48-inch widths, in lengths varying from 6 to 10 feet. Wallboard is sold at lumber-yards, but if you want only part of a sheet you had better see if you cannot get it from a carpenter.

The Blackboard Frame. The easiest way to make this is to tack lattice-strips or laths to the edges of the wallboard panel, on both sides (Fig. 326). Laths

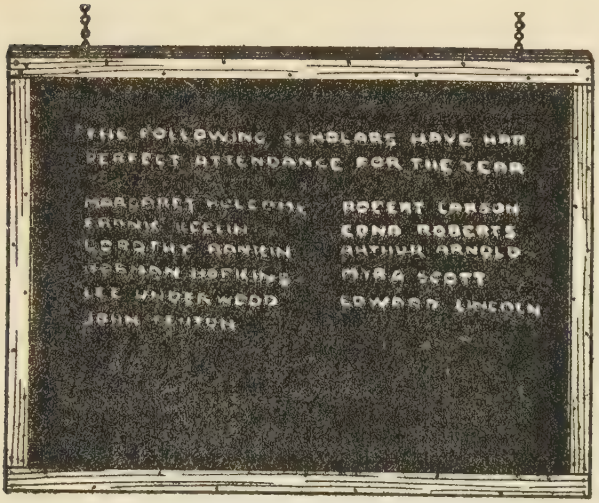


FIG. 325. A WALLBOARD AND LATH BLACKBOARD
(A chalk-rail may be added, if desired)

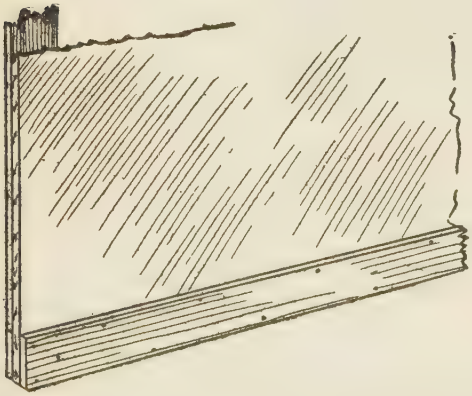


FIG. 326. FRAME THE WALLBOARD BLACKBOARD WITH LATHS LIKE THIS

are cheaper and you can plane them up satisfactorily. You can miter the frame strips at the corners, but neatly made butt-joints like those shown in Fig. 325 will look just as well and will be easier and quicker to make. Glue the strips to the wallboard,

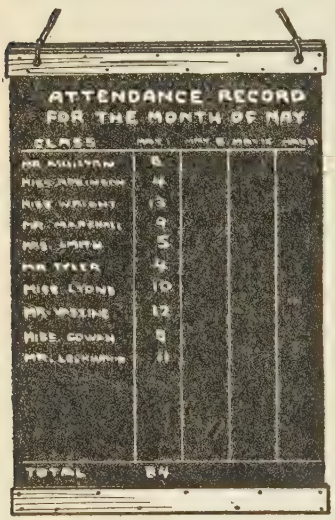


Fig. 327

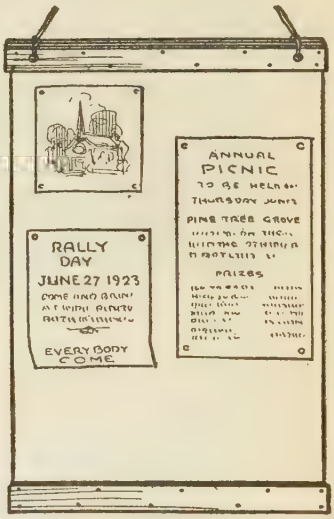


Fig. 328

FIGS. 327 AND 328. ONE SIDE OF THIS BOARD IS SLATED FOR A BLACKBOARD, THE OTHER SIDE IS LEFT PLAIN TO PIN NOTICES ON

and in addition nail them with $\frac{5}{8}$-inch or $\frac{3}{4}$-inch brads.

Slating the Blackboard. Schoolboard liquid-slating can be bought at most well-stocked paint stores, and it can be obtained through your Sunday school supply house. Directions for applying will accompany it. To prepare the wallboard for the slating,

it is a good plan to give the surface two coats of lamp-black thinned with turpentine. If you are not able to buy the liquid-slating, apply four coats of lamp-black and turpentine to the wallboard. This will make a fair writing surface.

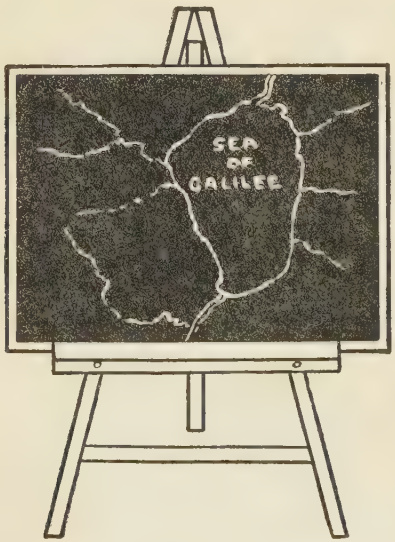


FIG. 329. A BLACKBOARD EASEL IS EASY TO MAKE

A Chalk-rail may be added to the blackboard frame if one is wanted. Make it of strips like the rail shown in Figure 332.

Finish the Frame Strips with paint or enamel.

Hangers. If there is a picture-molding from which to hang the blackboard, set screw-eyes in the top edge of the frame, and buy chain and picture-hooks for hanging.

A BLACKBOARD AND BULLETIN BOARD

A handy board is one slated on one side for a blackboard (Fig. 327), and left plain on the other

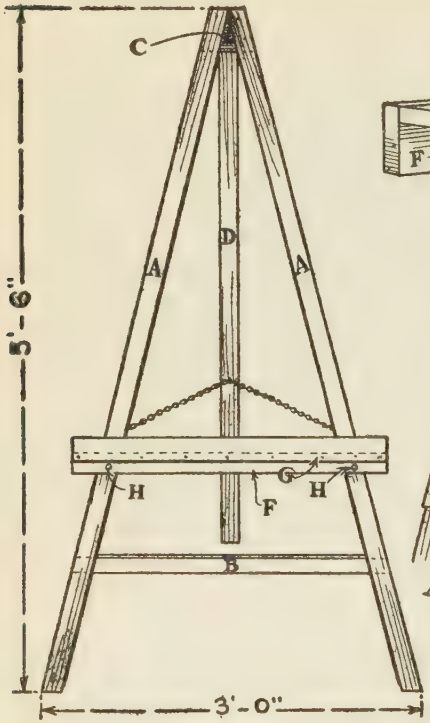


Fig. 330

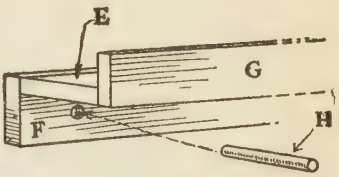


Fig. 332

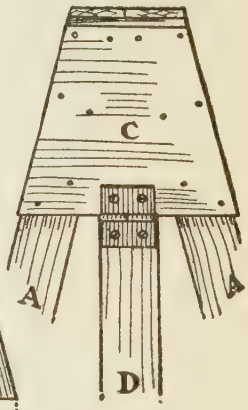


Fig. 331

FIG. 330. DETAIL OF EASEL FRAME
FIG. 331. HINGE THE REAR LEG IN THIS MANNER
FIG. 332. DETAIL OF BLACKBOARD SUPPORT AND CHALK-RAIL

side to pin notices on (Fig. 328). Using a piece of wallboard about 18 by 24 inches in size, it will only

be necessary to batten it with laths across the top and bottom, as shown.

Drill holes through the top battens for the attachment of chain or wire hangers.

AN EASEL FOR BLACKBOARDS AND MAPS

The easel shown in Figure 329 is made of 1-by-2 strips. Figure 330 gives dimensions for the A-shaped frame. Bring together the upper ends of uprights A, as shown, and fasten them with the block C (Figure 331); connect the lower ends with the cross-bar B. Fasten block C and cross-bar B to the back of the uprights. Cut strut D 6 inches shorter than strips A, and hinge it to the block C (Fig. 331). Fasten a loop of chain to uprights A, and the center of the loop to strut D, to keep the easel from spreading when set up.

The Blackboard Support and Chalk-rail should be built up as shown in Figure 332. Make shelf strip E 4 inches wide, nail a 3-inch strip to one edge for apron F, and a 2-inch strip to the other edge for ledge G. Bore a hole near each end of apron F, and a hole through each of the pair of easel uprights A, through which to run pegs H for pinning the shelf to the easel. The chalk-rail may be removed when the easel is wanted for a map rack.

Stain, Paint or Enamel may be used for finishing the easel.

Chapter XIX

FOR THE COAT-ROOM

A Coat-and-Hat-Rack for a Wall—A Portable Rack—A Whisk-Broom Holder—A Shoe-Polishing Case—A Waste-Basket.

Perhaps no provision has been made in your church building for a coat-room, and each member of the congregation and each member of the Sunday school must take care of his coat, hat, umbrella and rubbers as best he can, piling them on vacant pews or chairs. But coat-rooms are coming into their own as a necessary adjunct to the modern church; in buildings where no room has been provided, space is being partitioned off for the purpose. Partitions are so easily and so cheaply built of wallboard, nowadays, that a church may have conveniences which once might have been considered luxurious.

A COAT-AND-HAT-RACK FOR A WALL

Some of us have become so accustomed to hanging our coats and hats upon hooks at home, that we think of a coat-room as a space equipped like our clothes-closet. But that is not the ideal arrangement. Hats hung on hooks do not "stay put," especially when there is an after-service rush for the coat-room, presaging hot dinners with the least pos-

sible loss of time. Then, we might as well look upon the floor first as last. Much confusion and annoyance is avoided, of course, through the employment of coat-room attendants; but the approved system

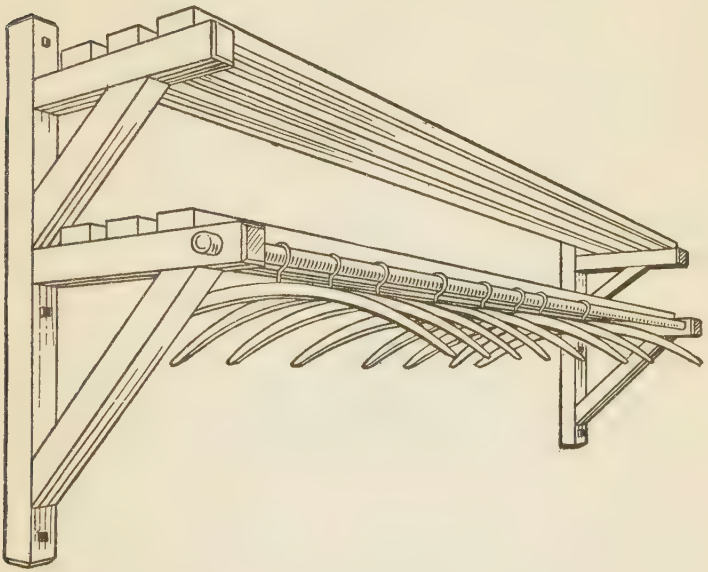


FIG. 333. A COAT-AND-HAT-RACK FOR A WALL

used in all large checking-rooms is a hat-rack above each row of hooks.

Figure 333 shows a home-made rack that has proved satisfactory. There is a rod for coat-hangers, instead of hooks, and above the rod are two tiers of hat-racks. Hangers keep one's clothing in better shape than hooks. With these arranged as shown in Figure 333, coats can be hung close to-

gether, like clothing at a dealer's, thus requiring a minimum of wall space.

The Rack in Figure 333 is supported by two end brackets, each built up as shown in Figure 334, of

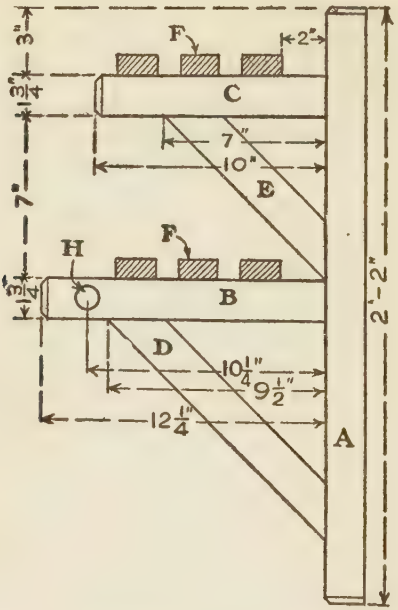


FIG. 334. CROSS-SECTION OF COAT-AND-HAT-RACK

upright A, horizontal pieces B and C, and diagonals D and E. Cut these out of 2-by-2s, planed smooth on all sides, following the given dimensions. Cut a ¼-inch bevel on one end of pieces B and C, and bore a 1-inch hole through piece B at H, for the hanger rod to run through. Nail the rack members together with 16-penny finishing-nails.

Hat-bars 7/8-inch thick and 1¾ inches wide (F, Fig. 334) are more satisfactory than board shelves, because there is less chance of the collection of dust. Their length will be determined by the length of the rack required. The distance between supports, however, should not exceed 10 feet.

The Hanger Rod. For this get a piece of ¾-inch galvanized iron pipe and two pipe caps (Fig. 335) from a plumber. Have the pipe cut 1 inch longer than the rack, and threaded on both ends. Slip the

FIG. 335. AN IRON PIPE HANGER ROD

pipe through the holes bored in the end brackets, and screw a cap on each end to hold it in position.

Coat Hangers cost little more than coat hooks. Most 10-cent stores sell the wire variety at 5 cents apiece.

Finishing. Paint or stain the woodwork of the rack, and paint or enamel the pipe hanger rod. Fasten the rack to the wall with lag-screws. These are screws with square heads that are turned with a wrench.

A PORTABLE RACK

The coat-and-hat-rack shown in Figure 336 is used, in addition to wall-racks, in most checking-rooms of any size. It is usually stood in the center of the room. It is particularly adapted for use in the

church building since it is mounted on casters and can be pushed out into one of the main rooms, or

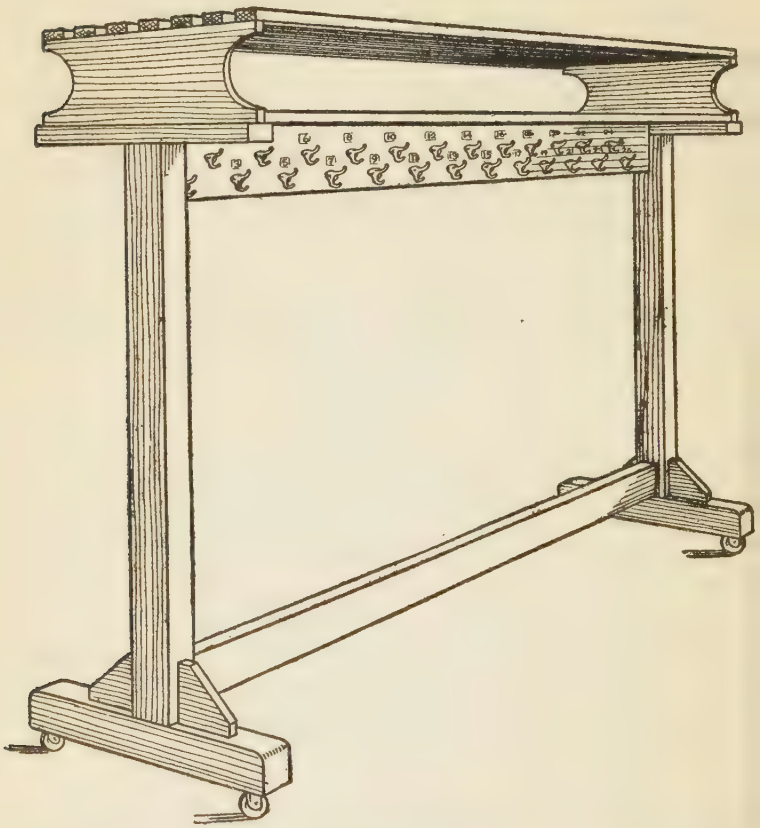


FIG. 336. THIS PORTABLE RACK HAS CAPACITY FOR FIFTY COATS AND HATS AND IS A GOOD TYPE OF RACK FOR A COAT-ROOM

taken out on the lawn, whenever occasions arise to use it there.

The rack illustrated has twenty-five coat-hooks on

each side, thereby accommodating the wraps of fifty people. Racks above the hooks hold hats. Pipes

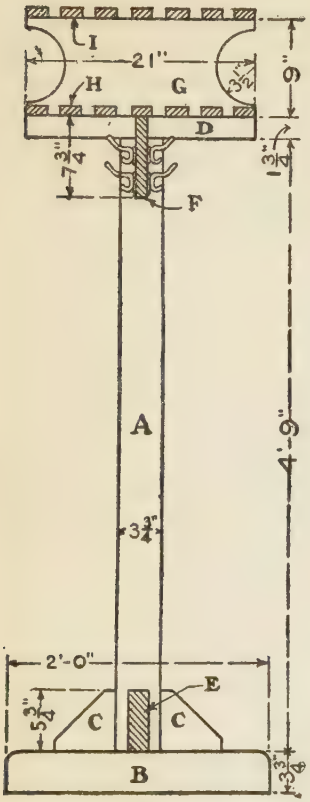


Fig. 337

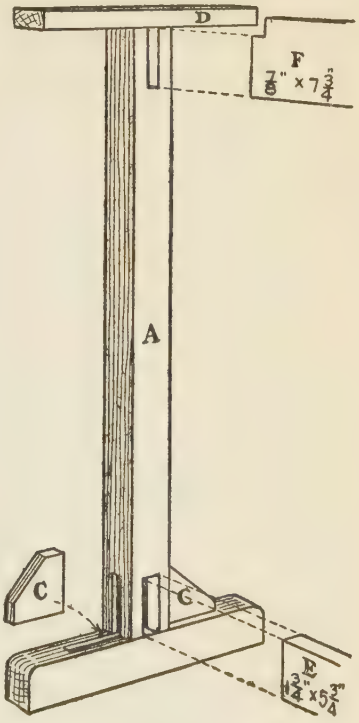


Fig. 338

FIG. 337. CROSS-SECTION OF PORTABLE RACK
FIG. 338. DETAILS OF END POSTS AND RUNNER BLOCKS

can be substituted for hanger rods, in place of hooks, as the wall-rack shown in Figure 333 is equipped.

The End Supports are built up of a 4-by-4-inch

post A (Fig. 337), runner block B, a pair of brace blocks C, and a 2-by-4 top plate D. Figure 338 shows how these pieces are assembled. Center runner block B and top plate D on the post ends and spike them to the post.

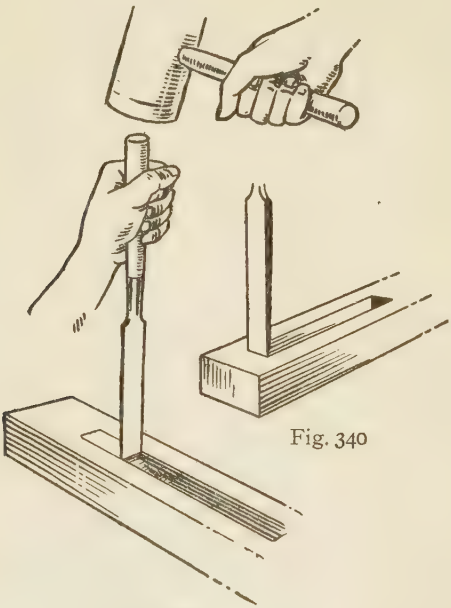


Fig. 340

Fig. 339

FIGS 339-340. THIS IS THE WAY TO CUT THE POST MORTISES

Mortising the Posts. Mortise the side faces of posts A, and the upper face of runner blocks B, as shown, for the brace blocks C to sit in. Also, mortise the inner face of the posts at the top and the bottom, to receive the ends of base and hook rails E and F.

As brackets C and hook rail F are to be cut from ⅞-inch stock, it will be best to use a ⅞-inch chisel for cutting the mortises for them, because the entire width can then be cut in one operation. Start cutting at the center of the space marked off for a mortise, holding the chisel with the bevel of the blade toward you, as shown in Figure 339. Drive the chisel into the wood to a depth of ⅜ inch or so, withdraw the blade, set it about ⅛ inch back of the cut, and drive it in again; reset and drive it in a third time, a fourth time, and so on until the end of the mortise has been reached. Pry out the wood between the cuts, as you proceed. Having cut from the center to one end, start at the center again and work to the other end of the mortise. Working over the surface a second time, increase the depth of the mortise another ⅜ inch. Three-quarters of an inch is deep enough for mortises for brace blocks C, but the mortises for the ends of rails E and F should be 1¼ inches deep. Figure 340 shows how to square up the ends of the mortise with the flat side of the chisel. The mortise for the end of base rail E must be 1¾ inches wide. A chisel narrower than this can be used for cutting it.

The Horizontal Rails. The widths of base rail E and hook rail F are shown in Figure 337. The length for a rack with twenty-five hooks on a side should be 6 feet 8 inches. This allows 1¼ inches at each end to set into the post mortises. The upper corner of hook rail F must be cut away, as shown in Figure 338, to fit around plate D. Fasten the rails in the mortises with glue.

The Hat-racks have 1-by-2-inch bars, the lower ones (H, Fig. 337) supported on top plates D, the upper ones (I, Fig. 337) on two end brackets (G). Cut the brackets of the shape and size shown, out of a ⅞-inch board. Notice by Figure 336 that the lower bars fit between brackets G. Space the bars as shown and nail them in place.

The Hooks should be of the type shown in Figure 341. Draw two lines lengthwise of the hook rail F,

Fig. 341

Fig. 342

Fig. 341. USE STRONG IRON HOOKS OF THIS FORM
Fig. 342. THE CASTERS SHOULD BE LARGE AND BALL-BEARING

one line along the center of the board, the other halfway between this line and the lower edge. On the upper line mark off the positions for twelve hooks, on the lower line positions for thirteen. Make the spacing exactly 6 inches from center to center of the hooks. Stagger the hooks on one side of the board so their screws will not strike those of the hooks on the opposite side.

The Casters should be 2 inches in diameter and ball-bearing. Screw them to runner blocks B near the ends (Fig. 336).

Check Numbers can be purchased of metal or cardboard for numbering the coat hooks. Tack them directly above the coat hooks as shown in Figure 336.

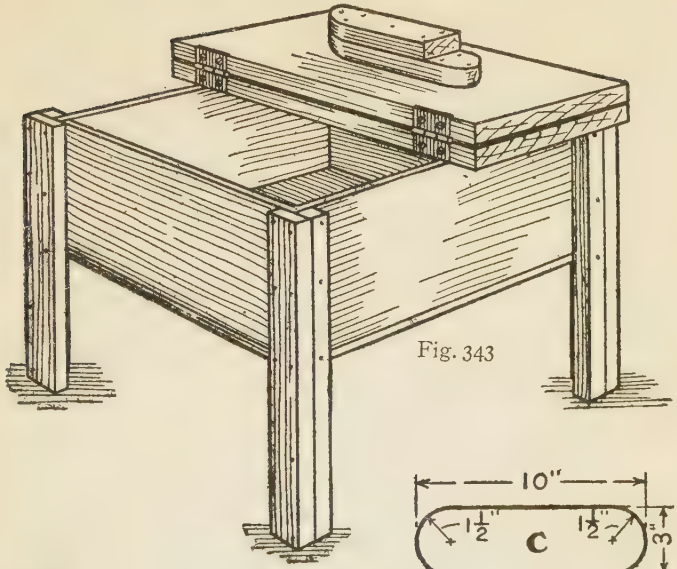


Fig. 343

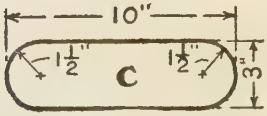
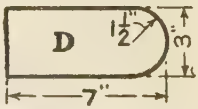


Fig. 346



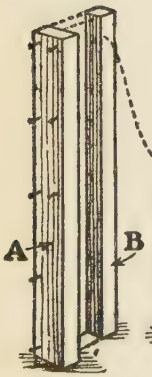


Fig. 345.

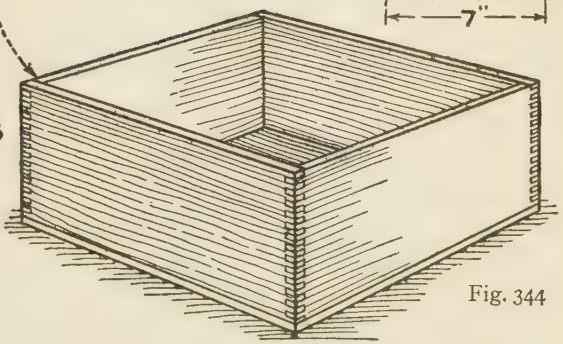


Fig. 344

FIG. 343. THE SHOE-POLISHING CASE WILL BE IN BIG DEMAND IN RAINY WEATHER

FIG. 344. USE A SQUARE, OR NEARLY SQUARE, SOAP BOX FOR THE TOP

FIG. 345. MAKE THE LEGS LIKE THIS

FIG. 346. THESE BLOCKS FORM THE SHOE-REST

Buy a duplicate set of numbers to issue in checking. The place for the hat is directly over the coat hook—the upper rack for even numbers, the lower one for odd numbers.

Finish the Rack with stain and shellac or paint.

A WHISK-BROOM HOLDER

A coat-room attendant has frequent requests for a whisk-broom, and a holder for one will be a good piece of equipment to provide. You will find a plan for a holder in Figure 59, Chapter III.

A SHOE-POLISHING CASE

A muddy street crossing, an unnoticed or unavoidable puddle, and splashes from a passing automobile ruin many a shoe-shine between home and church. A first-aid polishing-case with rags, brushes, and cans of polish will relieve victims of the embarrassment of attending services with shoes unkempt; and such a case should be a part of the equipment of the coat-room.

The Box. A soap-box measuring 13 inches wide, 14 inches long and 8 inches deep (Fig. 344) was used for the shoe-polishing case shown in Figure 343. This is a standard size of box, and you can pick up one at the grocery store if there isn't one at home.

The Legs are ripped out of a ⅞-inch board. Each is built up of two strips (Fig. 345). Cut strip A 2 inches wide and B 1⅛ inches wide, and make their length 16 inches. Nail the strips together, then nail

them to the corners of the box, as shown in Figure 343.

The Top is made of two ⅞-inch boards, one nailed to the box, the other hinged to open. Cut the pieces of the right size to have a projection of ½ inch over the faces of the leg strips. Set a pair of hinges in the edges of the pieces, as shown in Figure 343.

The Shoe-rest fastened to the under side of the cover is made of two blocks (C and D, Fig. 346). Nail them together, then nail or screw them to the hinged cover board.

Compartments for cans of cleaner and polish, shoe-brushes, and rags can be partitioned off inside of the box with box boards.

Finishing. The shoe-polishing case can be stained, painted or enameled. A dark color is preferable, of course, because it will not show soiling.

A WASTE-BASKET

The coat-room requires a waste-basket, and so does the minister's study, the reading-room, and the Sunday school rooms. There are seldom enough of these receptacles in the church building.

The Material for the waste-basket shown in Figure 347 consists of wallboard for the sides, a ⅞-inch board for the bottom, strips ⅞-inch square for corner posts, and laths for cleats and rim strips.

Figure 348 shows a plan of the basket, with its parts lettered. Cut the wallboard sides A and B by the patterns of Figures 349 and 350. You can saw wallboard as easily as boards. Sawing will make

rough edges, but these can be removed quickly by rubbing with sandpaper. Cut the corner posts C by the pattern of Figure 351.

To assemble the basket, first tack wallboard sides A to posts C, as shown in Fig. 349; then cut a pair

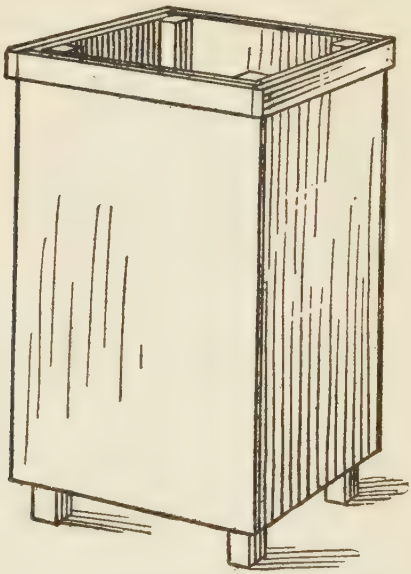


FIG. 347. THERE IS NEED OF SEVERAL OF THESE WALLBOARD WASTE-BASKETS IN THE CHURCH BUILDING

of lath cleats (D, Fig. 352), fit them between posts C and tack sides A to them (Fig. 349). Next, tack sides B to the posts, being careful to set their edges exactly even with the edges of sides A, which they overlap. Cut the bottom board by the pattern of Figure 355, notching the corners to fit around the

posts. This board rests upon the cleats D and is fastened with carpet tacks driven through the side pieces into its edges. Cut the rim strips by the pat-

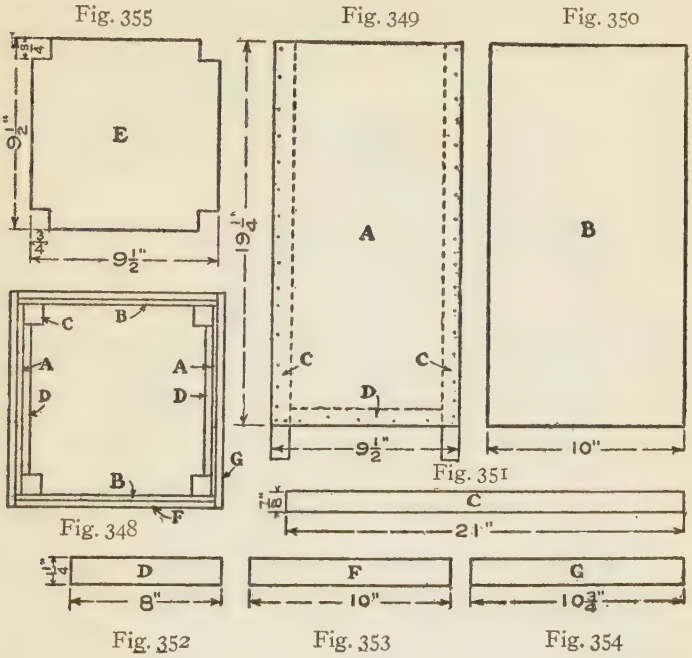


FIG. 348. PLAN OF WALLBOARD WASTE-BASKET
FIGS. 349 AND 350. PATTERNS FOR WALLBOARD SIDES
FIGS. 351-354. PATTERNS FOR FRAMEWORK STRIPS
FIG. 355. BOTTOM BOARD

terns of Figures 353 and 354, fasten them to the corner posts, and tack the wallboard to them.

Finishing. Give the wallboard two coats of paint. Then apply two coats of enamel to all surfaces. If you have had any experience in stenciling, you might stencil a design on the sides of the basket.

Chapter XX

BOOTHS FOR CHURCH BAZAARS

A Fancywork Booth—A Pergola Booth—A Flower Booth—An Ice-Cream Booth—An Old-Well Grab-Booth—Knock-Down Booths—A Handicraft Booth.

The annual church fair will provide work for all willing to devote time and energy to it, and you and the other boys of the Sunday school can be important factors in its success. In the first place, you can construct the booths. That will be a service that the ladies are not keen about performing and that the men seldom have time for. In addition, you can make pieces of handicraft for the sale, and what is more your class can rig up a booth in which to sell toys and gifts that you have made.

Among the various forms of booths to be found at fairs may be mentioned those for fancywork, handkerchiefs, baby clothes, mending, notions, novelties, toilet articles, candy, refreshments, groceries, girls' handicraft, boys' handicraft, books and magazines, flowers and plants, and bird houses and garden accessories.

The number of booths will be dependent upon the size of the hall the fair is to be held in and the amount of coöperation to be given the bazaar committee by church members. The form may be as varied as the articles to be sold. I have seen square

FIG. 356. A FANCYWORK BOOTH

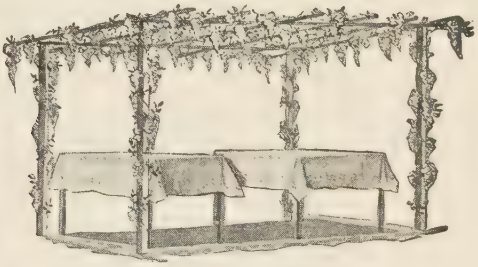


FIG. 357. A PERGOLA BOOTH

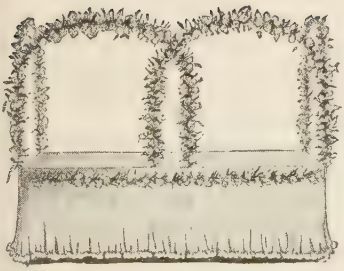


FIG. 358. A FLOWER BOOTH

FIG. 360. AN OLD-WELL GRAB-BOOTH

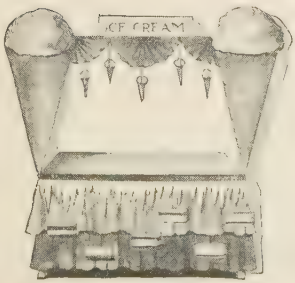


FIG. 359. AN ICE-CREAM BOOTH

© DENNISON MFG. CO.

[*Facing* **page 244**

booths, round booths, and booths of irregular shape; old-well and fish-pond grab-booths; booths built like a large doll's house, and in the form of a Dutch windmill, a gypsy camp, a cave, a pavilion; booths representative of different nationalities; others typifying the seasons of the year; Mother Goose booths; and booths rigged up on carts (A Push-cart Fair).

Several clever designs for easily-built booths are shown in the sketches opposite page 244. These are reproduced by courtesy of Dennison Manufacturing Company,* makers of crêpe papers and other materials necessary for dressing up booth frameworks and for decorating the hall. I shall give you a few suggestions for constructing these booths.

A FANCYWORK BOOTH

The L-shaped booth shown in Figure 356 is a good one to set up in a corner of the hall. By pressing into service two of the church tables and placing them at right angles for counters, it will only be necessary to erect corner posts to support the overhead decorations. For posts get 2-by-2 inch material, s-4-s (surfaced-four-sides) at a lumber yard. Fourteen-foot lengths cut in half will be about right. Wire these posts to the table-legs. A wooden strip fitted between the posts at the floor will furnish a ground to tack material to for enclosing the front of the counter.

* A helpful booklet, "How to Decorate Halls, Booths and Automobiles," can be obtained from Dennison Manufacturing Co., Framingham, Mass., for ten cents.

A PERGOLA BOOTH

The design shown in Figure 357 will introduce some outdoor atmosphere. Two tables, four 4-by-4 posts, two 2-by-4 beams, and half a dozen or so 1-by-2 strips for purlins, are needed. It is not likely that you will be permitted to nail the corner posts to the floor. In that case, it will be necessary to place a 2-by-4 floor plate around the base to spike the posts to, or to stand the tables in the right positions so the posts can be fastened to their corners. Vines and flowers for decorating the pergola can be made of crêpe-paper or purchased ready-made.

A FLOWER BOOTH

A booth like that in Figure 358 can be rigged up on a small table; or boards placed across a pair of horses, as shown in Figure 361, may be used for the counter. Heavy wires bent into loops make good arches to decorate with vines and flowers. Bend the ends of the wire loops as shown in Figure 361 and fasten them to the edges of the table boards. Lattice strips can be substituted for the wire arches. The strips will bend readily into the shape desired after soaking for a short time in water.

AN ICE-CREAM BOOTH

Two or three small refreshment booths like that shown in Figure 359 generally realize a larger sales total than one large booth. The counter may be a

table, or may be built up of boards and horses, as shown in Figure 361. The large ice-cream cones can be made of heavy brown wrapping-paper, rolled into cornucopias, and reënforced on the inside with laths. Crushed white crêpe-paper makes good imi-

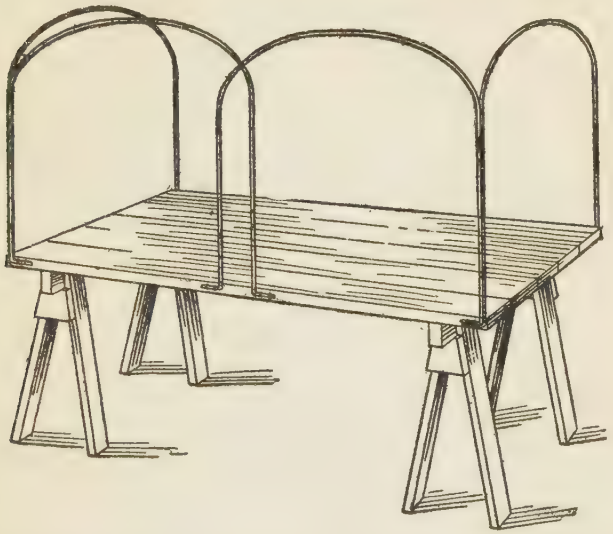


FIG. 361. BOARDS ON HORSES MAKE GOOD TABLES FOR BOOTHS
Make the framework for the booth shown in Fig. 358 like this

tation ice-cream. The small cones can be made similarly or may be ice-cream cones. Dark brown, pink and white are good colors to use for decorating the booth. Strips of "icicles" like those shown along the front of the table can be cut out of white paper. The "ice-cream bricks" on the face of the counter are candy-boxes painted to represent layers of different flavors of ice-cream.

AN OLD-WELL GRAB-BOOTH

For this ever-popular and consequently profitable type of booth, the old-well adaptation shown in

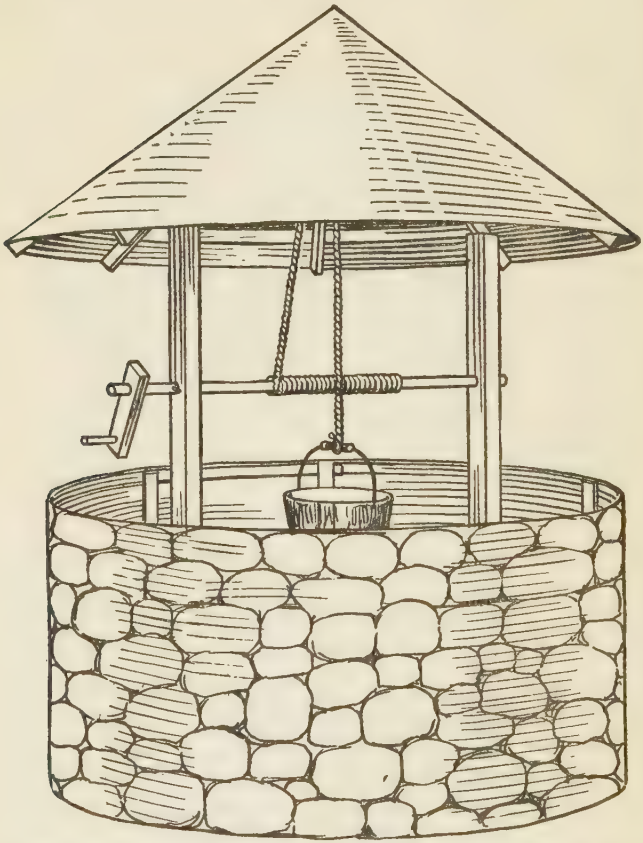


FIG. 362. DETAIL OF WELL FOR BOOTH SHOWN IN FIGURE 360

Figure 360 is worth the trouble of building. The detail of the completed well (Fig. 362), and the detail

of the completed framework (Fig. 363), show exactly how to set up the booth.

Material. The framework of the well requires two 2-by-2s 6 feet long for posts A, three pieces of lattice-strip 16 feet long, or six pieces 8 feet long, for hoops B for the well-curb and the roof, and laths for uprights C of the curb framework and roof rafters D.

The Well-curb. Bend the lattice-strips into hoops about 5 feet in diameter, and fasten the ends together with brads. Nail two of these hoops to posts A, one at the floor, the other 3 feet above the floor. Then cut the six lath uprights C 3 feet long and fasten them to the curb hoops, spacing them equidistantly. Cover the curb framework with building-paper or heavy wrapping-paper.

The Roof is framed with eight or nine laths 3 feet 9 inches long. Drill holes through the peak ends of the laths, run a piece of wire through the holes, and twist the wire ends together. Drill another hole through each lath 8 inches from the lower end, and run a wire through each hole for wiring the laths to the rafter hoop B.

The roof framework must be covered with building-paper or wrapping-paper. Then build it up with paper until the rafters no longer show through, and the surface is as nearly conical as you can make it. A top covering of paper should then be added.

The Windlass is made of a curtain-pole (E, Fig. 364), a short block (F) and a dowel-stick or other stick (G). Bore a hole through each post 4 feet above the base, through which to run the shaft of

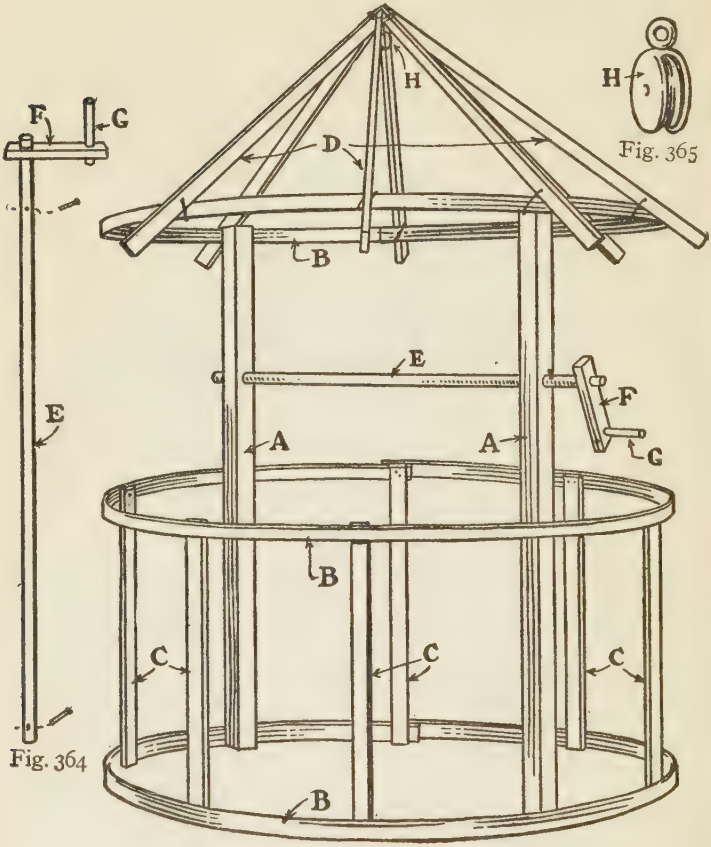


Fig. 363

FIG. 363. DETAIL OF FRAMEWORK OF WELL BOOTH
FIG. 364. DETAIL OF WINDLASS
FIG. 365. PULLEY FOR WELL ROPE

the windlass. Drill holes for pins to keep the shaft from pulling through the post holes when set in position. Nails can be used for pins.

The Old Oaken Bucket may be a wooden pail or a tin pail covered with bark. Use a piece of clothes-line for the well rope, and fasten a clothes-line pulley (H, Figs. 363 and 365) in the peak of the roof for it to run over.

Finishing. The roof of the well may be left plain, as shown in Figure 362, or it may be shingled, as shown in Figure 360. Shingles may be cut out of building-paper or cardboard. Paint the well-curb gray for masonry, and indicate field stones by marking off the interstices with black paint. Figure 360 suggests how the curb and posts may be decorated with artificial hollyhocks and vines.

The interior of the well must be blocked off except at the center to conceal the person who puts in the "grabs." The covering may be made of wallboard painted to look like water.

KNOCK-DOWN BOOTHS

Inasmuch as booths are required at least once a year by the average church, a scheme for a knock-down framework would save considerable time and confusion in getting the hall ready for a bazaar.

Pipe Frameworks are excellent, not only for counters but also for canopies. I have seen all of the booths at a bazaar made in this manner, and there seems to be no limit to the variety of designs that can be devised. With the pipe cut to two of three

lengths, or not to exceed half a dozen, and with the proper assortment of fittings, the matter of assembling a booth framework is reduced to as simple a formula as that for setting up a smaller framework of Meccano or other toy-construction material.

The only possible objection to the use of pipe would be its cost. Under fortunate circumstances this might be eliminated or reduced considerably through large discounts. Boards are required in addition to the pipe and fittings, but these as well as the material for enclosing the frameworks can be used from year to year, if packed away with the pipe.

Wooden Frameworks can be designed and built to set up and bolt together in sections, and if there is room in the church building for the storage of "knock-down" frames, this is the most economical form of framework.

A HANDICRAFT BOOTH

The booth shown in the photograph of Figure 366 is a good "knock-down" model. It is well adapted to the display of articles that a boys' class has made for the bazaar, but it will serve for other lines, too. In fact, with the corner-post bird-houses eliminated, the design might be used for all of the main booths. Figure 367 shows a detail of the completed framework, with parts lettered to correspond with the other working-drawings. Figure 368 shows a detail of the front and rear frame sections of the framework; Figure 370 shows a detail of the four upper

FIG. 366. A "KNOCK-DOWN" BOOTH LIKE THIS CAN BE PRESERVED FROM YEAR TO YEAR

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lattice-work panels, two of which are used in the front and rear frames, and two for joining these

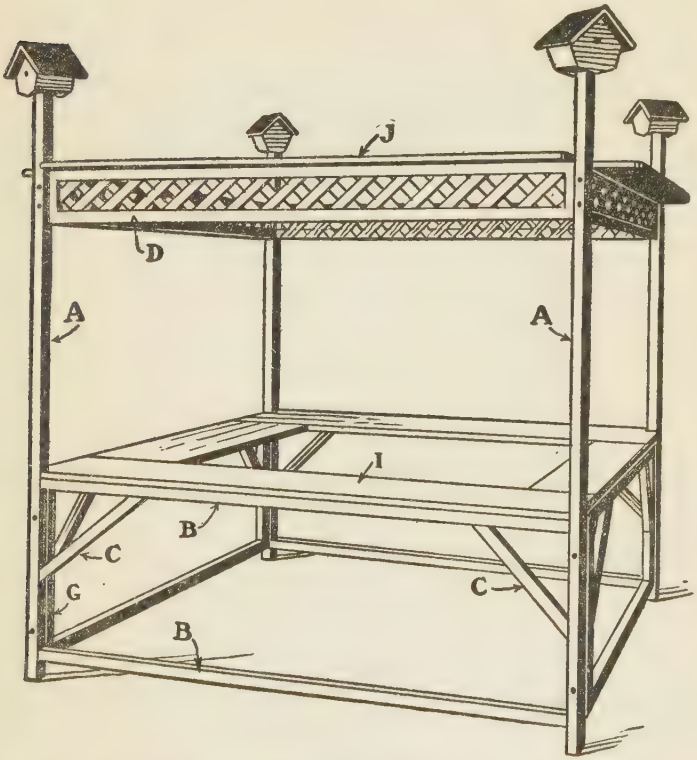

FIG. 367. FRAMEWORK OF THE BOOTH SHOWN IN THE PHOTOGRAPH OF FIGURE 366

frames at the sides; Figure 371 shows a detail of the two lower side frames.

The Material. For corner posts A, plates B and braces C buy 2-by-2s; for strips D and E of the lattice-work panels buy 1-by-2s (Fig. 369), for diago-

nals F laths or lattice-strips (Fig. 370), for counters I 12-inch boards, and for shelves J 8-inch boards.

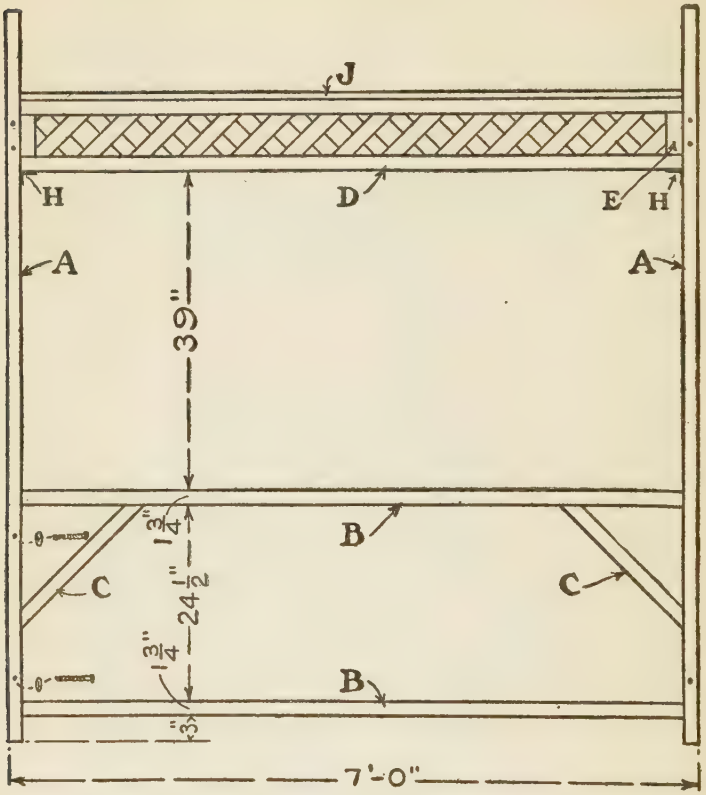

FIG. 368. DETAIL OF FRONT AND REAR FRAMES OF THE FRAMEWORK FOR THE "KNOCK-DOWN" BOOTH

These pieces should be ordered surfaced-four-sides, so you will not have to bother planing them. It will be best to use soft pine, or other light-weight easily worked wood.

The Front and Rear Frames should be built first, as shown in the detail of Figure 368. With the pieces cut to the lengths marked, fasten plates B between posts A with 10-penny finishing nails, at the heights shown. Then cut the diagonal braces C with their ends mitered, and nail them to the corner posts and to the counter plate.

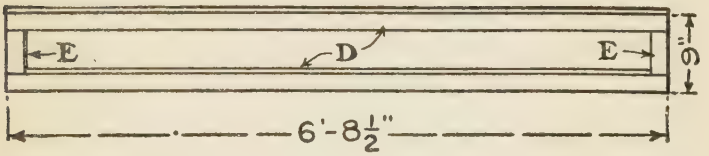

FIG. 369. FRAME FOR LATTICE-WORK PANEL

The Lattice-work Panels require a frame built up of the 1-by-2-inch strips D and E (Fig. 369). Cut the lattice-strips F with mitered ends; also, cut two blocks of wood for spacing them at equal distances apart. Nail one layer of strips to the frame slant-

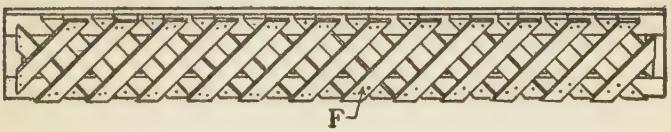

FIG. 370. DETAIL OF LATTICE-WORK PANEL

ing in one direction, then a second layer on top of them slanting in the opposite direction, as shown in Figure 370. Make four panels. Place one between the upper ends of the front frame, another between the upper ends of the rear frame, and fasten with

finishing-nails and a pair of 2-by-2 inch iron braces (H, Fig. 368).

The Side Frames. Two of the lattice-work panels, and a pair of frames built up as shown in Figure 371 of strips B and G braced with the diagonals C, con-

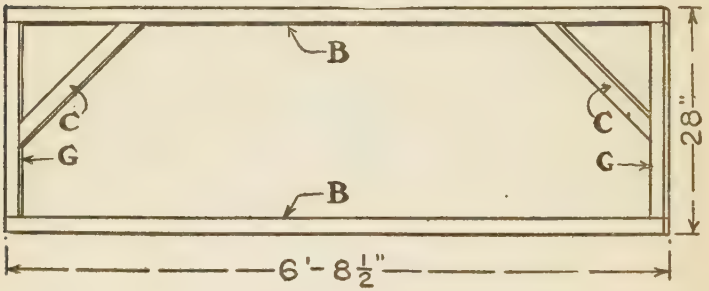

FIG. 371. FRAME FOR CONNECTING FRONT AND REAR FRAMES

nect the front and rear frames. To provide for bolting the sections together, bore two ¼-inch holes through each end of the side panel frames and two through each of the lower side frames; also, bore

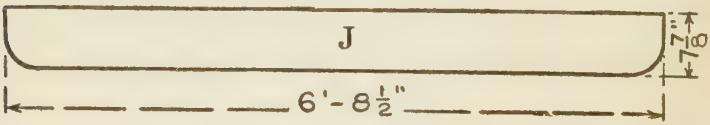

FIG. 372. DISPLAY SHELF

holes through posts A, taking measurements from the side frames to locate the holes in corresponding positions. Eight 2-inch stove-bolts will be required, but you had better buy a dozen so there will be some on hand to replace bolts lost.

The Counters require 12-inch boards, two as long as the over-all width of the booth, for the front and rear counters (I, Fig. 373) and two shorter pieces to fit between them for the side counters. Fasten these boards to the framework plates with screws, and to each other with angle braces, so they can be removed without damaging them.

The Display Shelves (J, Figs. 368 and 372) are made of 8-inch boards of the length of the lattice-work panels. Round the corners as shown, and screw a shelf to the upper edge of each panel.

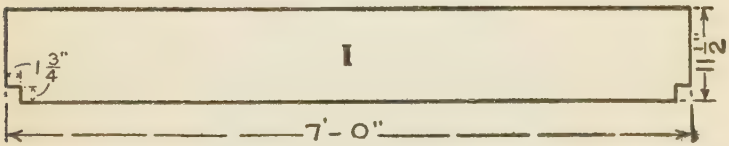

FIG. 373. COUNTER BOARD

The Bird-House Caps for the posts may be built like the wren house described in Chapter VII, or according to any plan you prefer. These houses may be tagged for sale with the other articles exhibited in the booth.

Finishing. The framework of the booth may be stained or painted. I would suggest that you stain it brown or green. Enclose the sides below the counter with denim or burlap, tacking the material to the corner posts, the counter edges and the lower plates. Decorate the lattice-work panels with leaves procured in the woods or made of crêpe-paper.

Chapter XXI

A SANTA CLAUS FIREPLACE AND A TREE BASE

A Fireplace and Mantel—A Realistic Fire Effect—A Cross Standard for a Christmas Tree—A Box Standard.

It is worth while to build a fireplace for Santa Claus to make his entrance through at the Christmas Sunday school entertainment, because it can be kept from year to year, and its usefulness need not pass with the holidays. It is a good stage property for interior scenes in Sunday school dramatics. Of course, a grate-fire is not wanted for Santa Claus, but when the fireplace is used in other stage settings, a realistic fire effect is desirable, and it can be easily produced, as I shall explain later.

A FIREPLACE AND MANTEL

The mantel shown in Figure 374 has been designed to stand against a wall, but to enable Santa Claus to enter the fireplace through the back, you can stand it against a doorway, concealing the upper part of the opening with wallboard or a drapery; or you can construct a wallboard chimney-breast from the mantel-shelf to the ceiling, setting this far enough from the wall to make a place of concealment behind the mantel for Santa Claus.

The Mantel Framework is shown in Figure 375. The height for the shelf of the model illustrated is 4 feet, the width of the mantel is 4 feet 6 inches; the jamb each side of the fireplace opening is 9 inches;

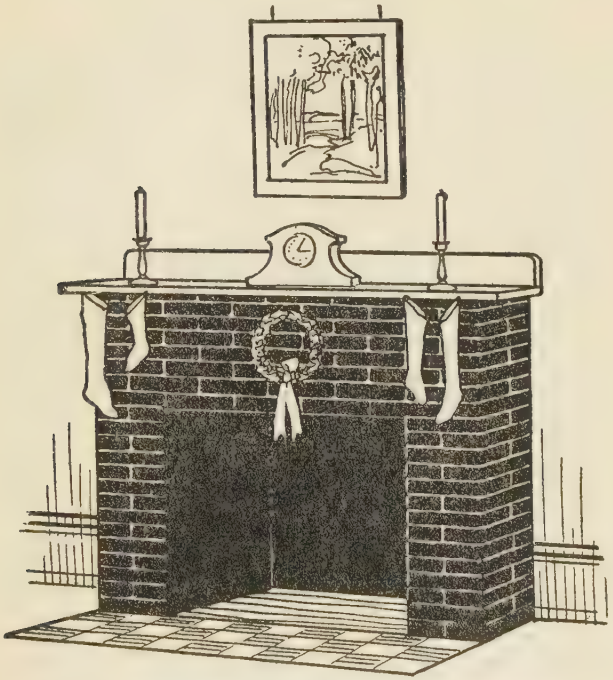

FIG. 374. THIS SANTA CLAUS FIREPLACE AND MANTEL CAN ALSO BE USED AS A PROPERTY FOR PLAYS

the height of the fireplace opening is 30 inches. You can vary these dimensions, however, as you see fit.

Make the mantel ends of boards 10 inches wide (A), the shelf (B) of two boards of the right width and length to make a projection of 3 inches over the

front and ends. Nail the shelf boards to the end pieces, then cut the 1-by-2 crosspieces C to fit between the end boards, and fasten one directly below the shelf, the other at the height of the fireplace

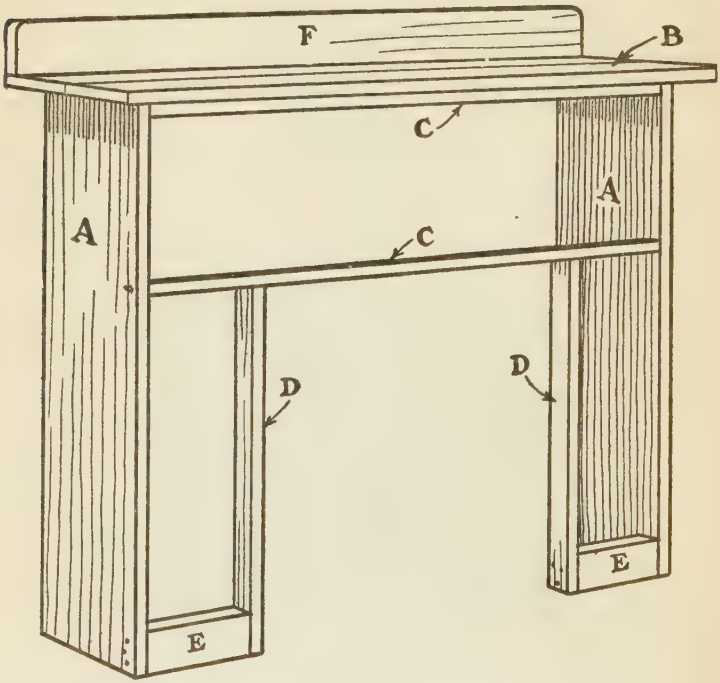

FIG. 375. BUILD THE MANTEL FRAMEWORK LIKE THIS

opening. Cut the 1-by-2 strips D to fit between the lower crosspiece C and the floor, at the sides of the fireplace opening, and cut the 2-by-4 blocks E to fit between their lower ends and end boards A. A board 4 inches wide by the length of the shelf (F),

fastened to the back edge of the shelf, will complete the framework.

Make the mantel front of one piece of wallboard (Fig. 376). Place the piece against the framework and mark off the fireplace opening on it. Cut out the opening with a saw or a jack-knife. It will be

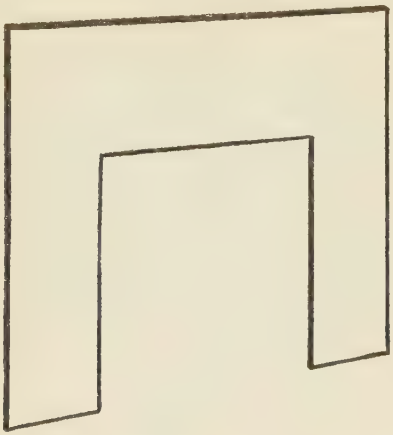

FIG. 376. WALLBOARD FACING OF MANTEL

best to fit and tack a strip of wallboard to each end board of the mantel, also.

The Fireplace. Make the back and ends of this of three pieces of wallboard fastened to pieces of 1-by-2 (Fig. 377). Make this only as high as is necessary to keep the audience from seeing over it. Extend it back far enough so that Santa Claus can easily step over it from back of the mantel, in making his entrance.

A Hearth may be made of a piece of wallboard, marked off to represent brick or tile.

The Brickwork should be painted a good brick red. A paint dealer will help you in the selection of the shade. Give the wallboard two coats of this. Then mark off the mortar joints with a pencil and a yard-stick, or other straight-edge, and strike the joints with black paint.

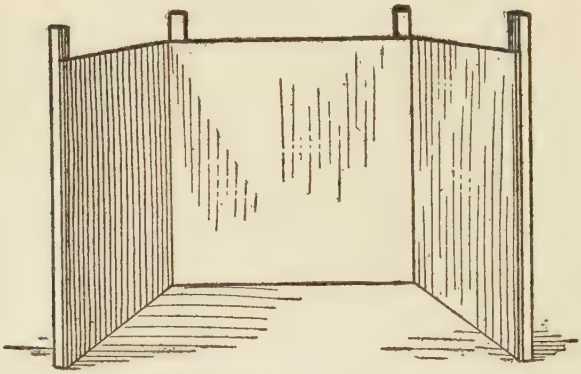

FIG. 377. MAKE THE BACK OF THE FIREPLACE LIKE THIS

When the brickwork has been painted, finish the shelf to match the woodwork of the room in which the mantel is used.

A REALISTIC FIRE EFFECT

When the fireplace is used for stage settings, a good fire effect is easily produced with an electric drop-cord and photographer's ruby-lamp, or with an ordinary electric-light lamp covered with red cloth but not brought into direct contact with the cloth. The lamp must be placed on the bottom of the fire-

place, and firewood piled around and over it. If you can borrow a set of andirons to support the logs, so much the better.

Glowing Embers may be simulated with a sign-flasher and a clear and a ruby lamp, the latter connected with the flasher. The flashing on and off of the ruby lamp will produce the desired effect.

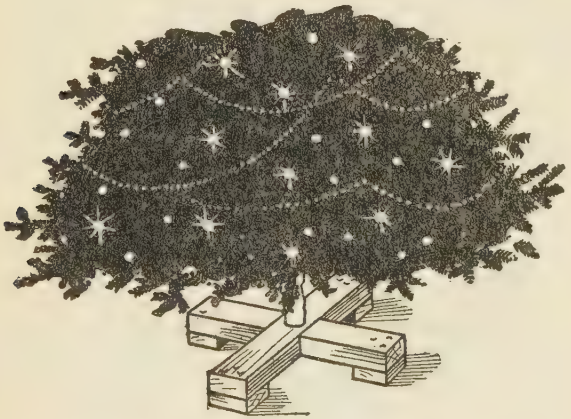

FIG. 378. THE CROSS STANDARD FOR A TREE

Flames may be simulated with red ribbon and an electric-fan. Fasten short lengths of the ribbon to the "burning" logs and place the electric-fan below the logs to make the ribbons flutter.

A CROSS STANDARD FOR A CHRISTMAS TREE

If your church owns one of the latest types of revolving bases for its Christmas tree, or any of the approved iron bases, there will be no need of a home-

made base like that shown in Figure 378 unless you decide to set up more than one tree, or your class "goodfellow" plans include the trimming of a tree for a needy family.

In case a base is required, the cross type of wooden standard is probably the easiest to make. This base requires two pieces of 2-by-4 20 inches long (A and B, Fig. 379) halved together—that is, a

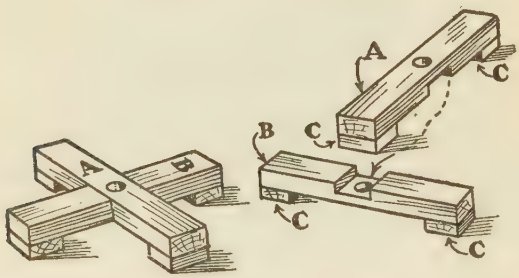

Fig. 379 Fig. 380

FIGS. 379 AND 380. DETAILS OF THE CROSS STANDARD

piece is cut from the center of each block equal to the width of, and one-half of the thickness of, the other piece, as shown in Figure 380, so the pieces will interlock. Saw along the sides of the notches, then split out the wood between the saw cuts with a chisel. The hole for the tree should be at least 2 inches in diameter. If you haven't an expansive bit that you can set to cut a hole of this diameter, bore a ring of small holes, and trim up to the 2-inch diameter with a chisel. Nail the shoe-blocks C to the under side of A and B, at the ends. It is not necessary to nail A to B if you make them fit snugly.

Finish the standard green or red with stain made of oil paint thinned with turpentine.

A BOX STANDARD FOR THE TREE

The tree base shown in Figure 381 requires a soap-box (Fig. 382) and four pairs of strips crossed and nailed together to form two sockets like that shown in Figure 383. Make one socket to fasten in the box

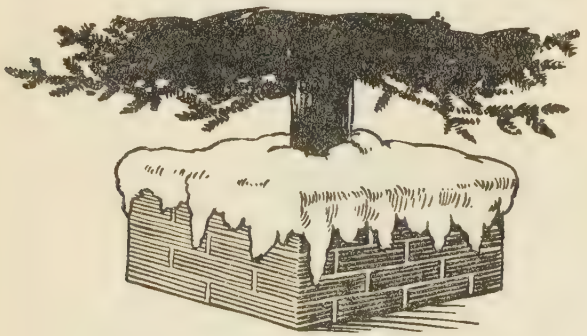

FIG. 381. A BOX STANDARD FOR A TREE

bottom, the other to fasten across the top edges of the box (Fig. 384). Space the strips so that there will be an opening of 1¾ or 2 inches square to accommodate the tree trunk. If the tree proves to be smaller than the socket opening, drive in wedges around it; if it is larger, whittle away the edges of the strips as much as is necessary to accommodate the tree trunk.

Finishing. When the base has been assembled, cover the sides of the box with red paper. Paper with a brick pattern printed on it can be purchased,

or you can use plain red paper and indicate brick courses and joints by pasting strips of white paper to it. The snow-capped top of the base is formed

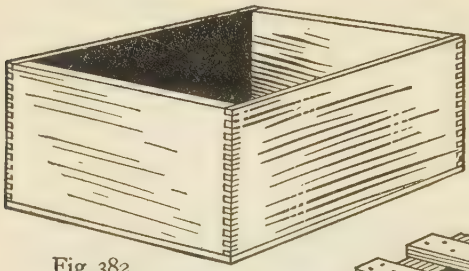

Fig. 382

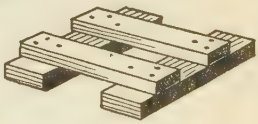

Fig. 383

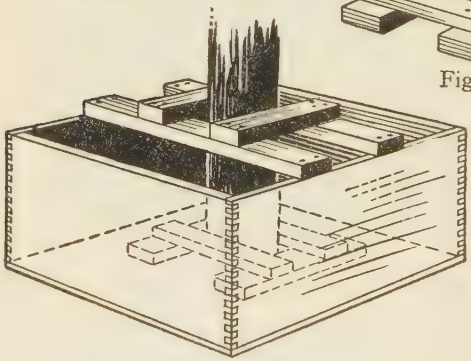

Fig. 384

FIGS. 382-384. DETAILS OF THE BOX STANDARD

of cotton with artificial snow sprinkled over it. Of course, this cannot be put on until after the tree has been set up.

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